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The Pittsburgh Crucible Steel Co.'s New Plant

Description of the Works at Midland, Pa., Which Include a Blast Furnace, Open-Hearth Plant and Blooming Mill—Future Extensions

The Pittsburgh Crucible Steel Co., Pittsburgh, recently has placed in operation at Midland, Pa., on a site of 538 acres, a new open-hearth steel plant and rolling mill, which, when complete, will consist of one 500-ton blast furnace, a 500-ton mixer, one pig-casting machine, 10 open-hearth furnaces, a blooming mill with boiler and engine house, a 24-inch bar mill, 8, 10 and 12-inch merchant mills, plow plate mill and coulter shop, an electric power plant, main and auxiliary pumping plants, calcining and water softening plants. The works also include a machine shop, foundry, carpenter shop and pattern storage building, laboratory, gas houses and gas producers, handling machinery and bins for ore, coal, limestone and other materials. The principal units at present in operation consist of the blast furnace, the open-hearth plant and blooming mill, together with the greater part of the auxiliary shops.

Ore Handling and Smelting

The iron ore used, which consists of hard and soft red hematite from both the Mesabi and old ranges, is received in standard ore cars from Lake Erie docks and dumped into a large concrete pit. From this it is lifted by the grab buckets of a 15-ton Hoover & Mason bridge, which will handle 2,500 tons in 12 hours, and is dumped on one of the stock piles. From each of these the same bridge takes the ore, as needed, and transfers it to the furnace bins, which are of the Brown Hoisting Machinery Co.'s type. From the bins the ore is conveyed by an Otis electric skip hoist to the furnace top.

The blast furnace was built originally by the Riter-Conley Mfg. Co. for the Midland Steel Co. It was designed for 500 tons daily and is operating on the original lining, put in when the furnace was first blown in in 1906. This lining, furnished by the Harbison-Walker Refractories Co., was 54 to 58½ inches on the inwall and 26 inches on the bosh. After being used seven years it is still in good, serviceable condition. This furnace is 85 feet high, 62 feet 7½ inches being above the mantle, which is supported by structural steel columns. The diameter of the wall is 14 feet 6 inches; the bosh is 21 feet 6 inches, and the inwall tapers from 21 feet 6 inches to 15 feet at the top of the

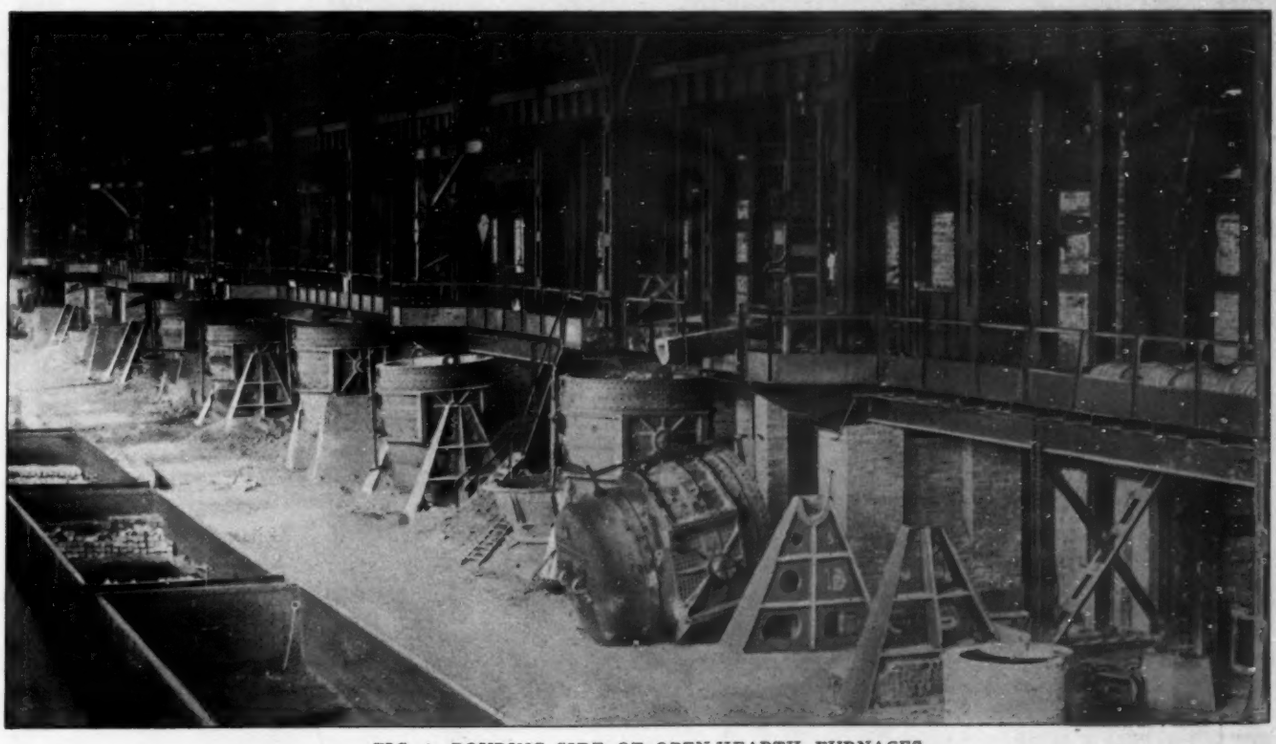


FIG. 1—POURING SIDE OF OPEN-HEARTH FURNACES

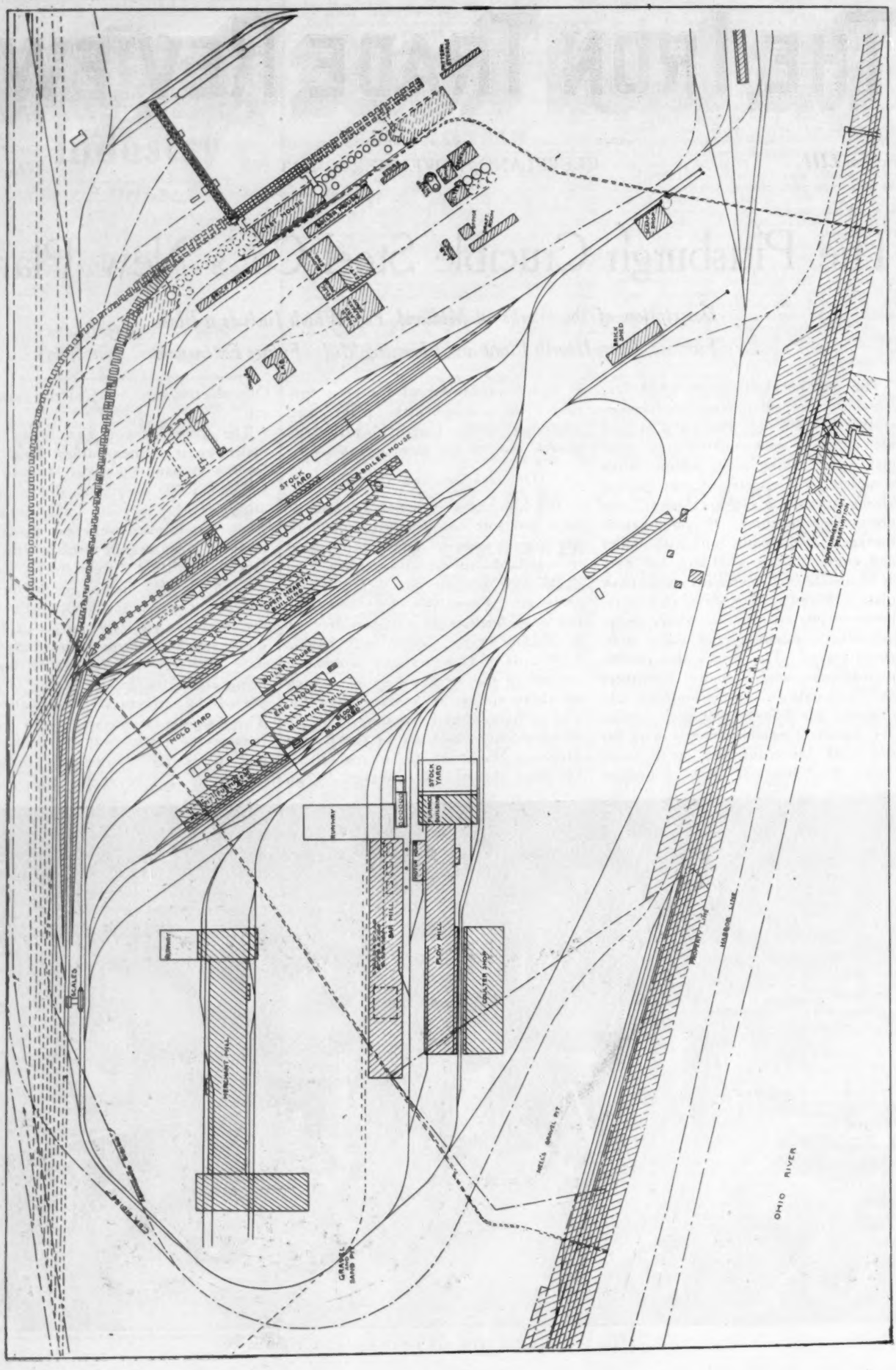


FIG. 2—GROUND PLAN OF THE PITTSBURGH CRUCIBLE STEEL CO.'S PLANT, SHOWING ALSO FUTURE EXTENSIONS

FIG. 3—SECTION OF OPEN-HEARTH CHARGING FLOOR

furnace. The bell has a diameter of 12 feet 6 inches. The overall diameter of the shell is 31 feet. The upper angle between the bosh and inwall approximates 86 degrees and the lower angle 75 degrees. The iron from the furnace is tapped into ladle cars, either for transportation to the 500-ton mixer in the open-hearth steel plant or to the Uehling pig casting machine.

The slag goes to a pit situated within the cast house and is there granulated. From this pit it is taken by a Morgan two-line, 10-ton bucket crane and dumped from a chute to standard hopper cars, which take it away for use as filling.

The blast is furnished by two Southwark horizontal disconnected compound blowing engines having steam cylinders 44 and 84 inches, with 84-inch tubs, and a common stroke of 60 inches, which can be operated either as compound machine or as four single engines. When compounded, each displaces 42,000 cubic feet of free air per minute. These are furnished with steam from an installation consisting of ten 350-horsepower gas-fired Rust boilers equipped with Babcock & Wilcox super-heaters. Each of these boilers carries 175 pounds pressure, with 100 degrees superheat. Boiler feed is furnished through a 4,000-horsepower Cochrane heater, in which 210 degrees Fahr. is constantly maintained, the water being supplied by an Epping-Carpenter 8-inch centrifugal pump driven by a Kerr steam turbine. This unit provides 500 gallons per minute, which is approximately the capacity of two Epping-Carpenter 12 and 18 by 16-inch pumps formerly used that will be held in reserve. The blowing engines are run condensing and exhaust to a Mesta 96-inch barometric condenser carrying 26 inches of vacuum. This is served by a Mesta dry air pump and a 16-inch De Laval, motor-driven centrifugal circulating pump. The same engine house also contains an Ingersoll-Rand compressor of 1,000 cubic feet capacity, which supplies air for use in the shops for general service. The blast is heated in McClure three-pass stoves, 21 x 100 feet, of which there are now five, one having been added recently.

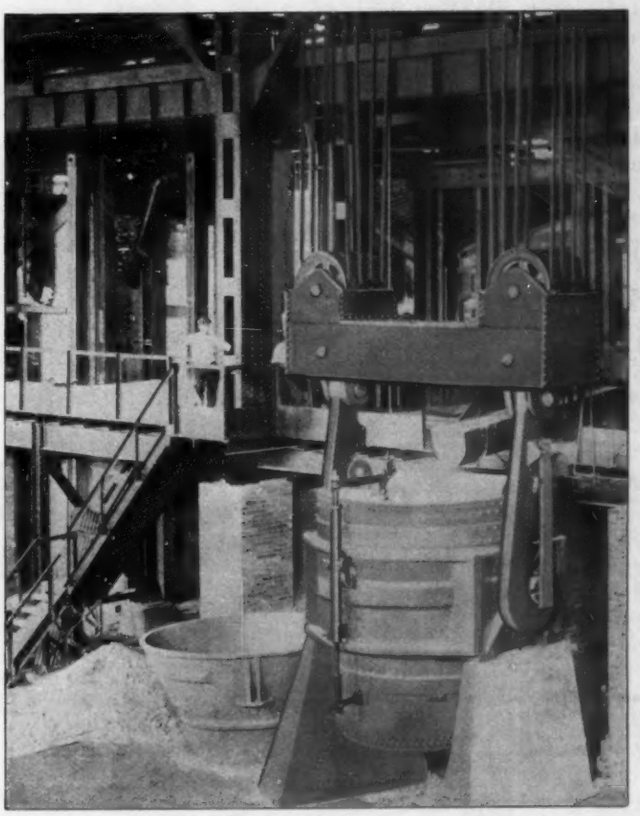


FIG. 4—TAPPING ARRANGEMENT OF OPEN-HEARTH FURNACE

In the open-hearth steel plant, the molten metal from the blast furnace is first handled in a 500-ton Mesta mixer, which is driven by two 105-horsepower General Electric mill type motors, which operate at a pressure of 230 volts, as do all the direct current motors in the plant. They are controlled by two automatic switchboards furnished by the Cutler-Hammer Mfg. Co., and operate in series while pouring and in parallel when the mixer is being brought back to position. The object of the latter is to obtain a quick return. From the mixer the iron is taken in 50-ton ladles by a 75-ton four-girder Alliance ladle crane of 80 feet span, which runs the entire length of the charging floor and distributes the metal to the furnaces. As poured from the mixer, the metal is weighed by a Fairbanks register beam scale. The scrap in the adjacent storage yard which is a runway 902 feet

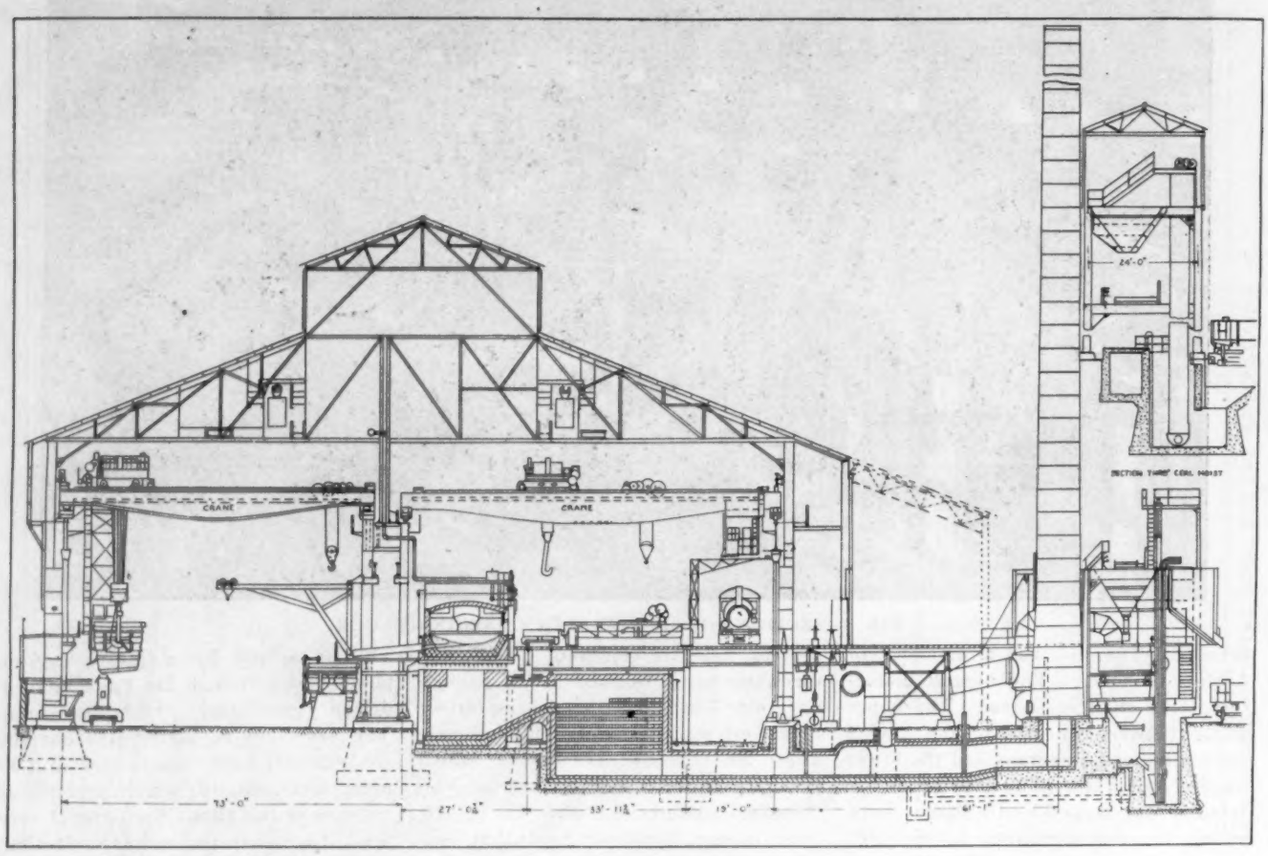


FIG. 5—CROSS-SECTION OF OPEN-HEARTH PLANT

long and 29 feet under the rails, is handled by two 10-ton, 3-motor Morgan stock cranes, with 100-feet span, and placed by means of Cutler-Hammer magnets in solid cast steel boxes, four boxes to a car. As these cars arrive on the charging floor, the boxes are shoved into the furnaces by one of two 5-ton, 4-motor, Morgan floor type charging machines. These also handle the limestone, ore, etc., which is chuted into boxes from bins in the stock yard

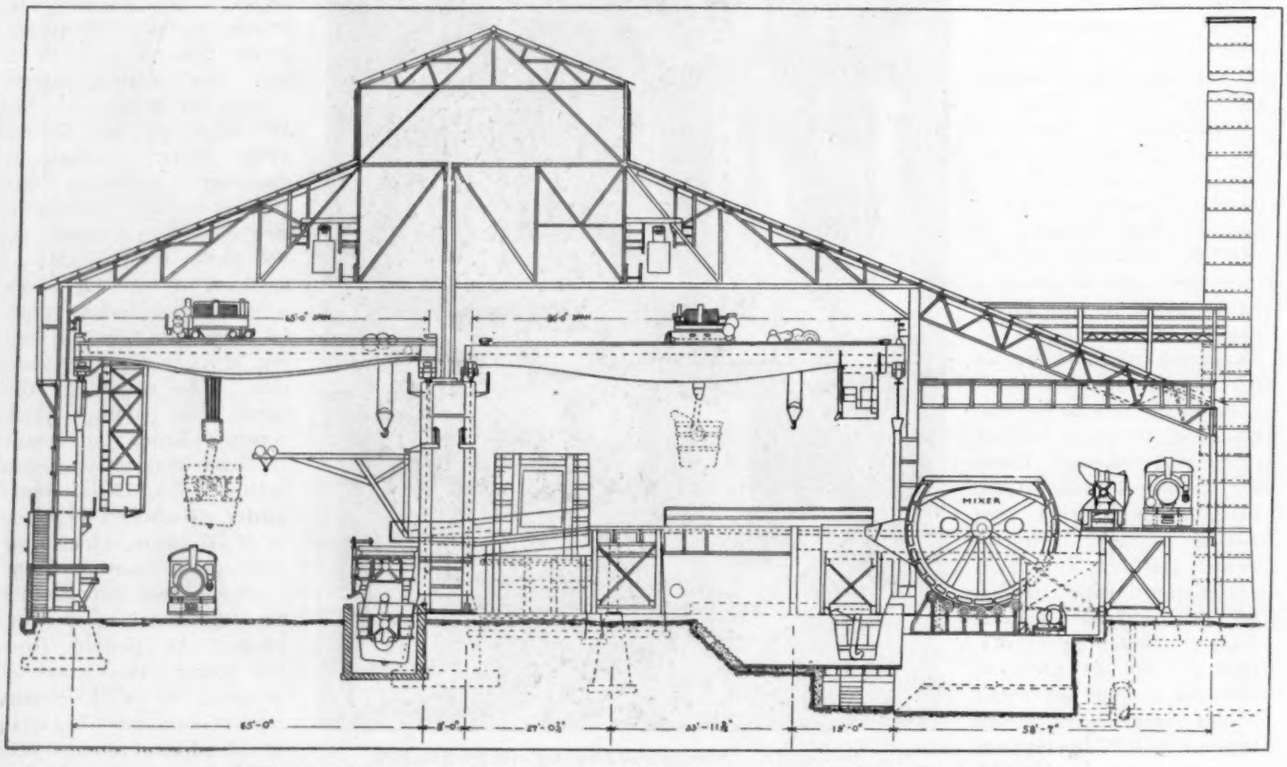


FIG. 6—SECTION THROUGH OPEN-HEARTH PLANT, SHOWING METAL MIXER

and brought to the charging floor in the same manner as the scrap. The charging floor is about 56 feet wide.

The open-hearth building, which is 984 feet long, 172 feet wide and 60 feet high to the bottom chord, has been designed to accommodate 10 furnaces, six basic and two acid which are now built and two basic to be added later. These have a rated capacity of 60 tons each, but can be crowded up to about 90 tons, the heats at present averaging 75 tons. The monthly capacity of the 8 furnaces already erected, without crowding, approximate 30,000 tons on the basis of two heats per day. The gas valves and furnace doors are effectively handled from central points of control on the charging floor by Caskey simplex hydraulic valves made by the Yarnall-Waring Co., Philadelphia. The gas is measured in its flow to the furnaces by Westinghouse gas meters. Furnace spouts are swung in and out by eight 6-ton Whiting jib cranes.

The spiegel, ferro-manganese, etc., used on the pouring floor side is handled by a 5-ton Alliance, two-rail traveler operating between two columns inside of the large crane runway. This material is taken from concrete bins at the south end of the building, which are accessible to the crane. The bins are below the charging floor level, and the material is dumped to them directly from cars on the track above.

The ladles are handled by two 150-ton, four-girder Alliance cranes with 65-foot span. Along the pouring runway there is also one 10-ton, 3-motor Morgan crane, with 64 feet 5 inches span, for general service. On each side of the runway a protected walk has been constructed at the crane operator's level and the repair work on the larger cranes is further provided for by a 7½-ton Northern Engineering crane running on a 15-inch I-beam which is looped completely around the building.

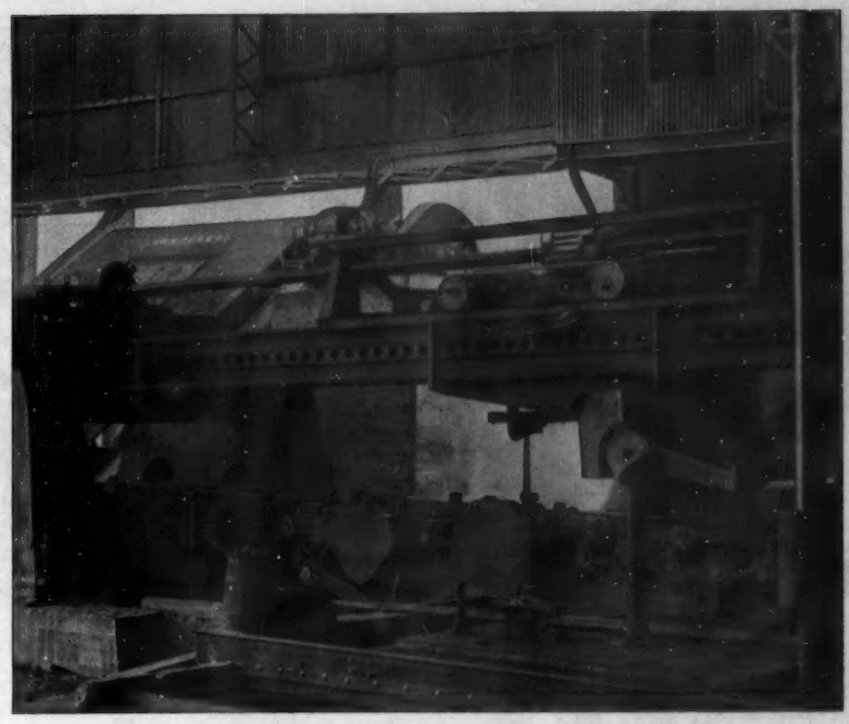


FIG. 8—SHEAR TABLE AND BILLET CONVEYOR

FIG. 7—THE 40-INCH, TWO-HIGH, REVERSING BLOOMING MILL

The metal is poured into ingot molds which vary from 18 x 20 inches up to 32 x 32 inches. The smaller size weigh from 2½ to 3 tons and the largest run as high as 8 tons. Some ingots used for forging steel are cast in pairs, being bottom poured on ingot buggies. For mold storage, there is a crane runway 222 feet long by 67 feet span. This is equipped with a 10-ton Morgan electric traveling crane.

The open-hearth furnaces are gas-fired, with the usual regenerative system of checkerwork. Natural gas is now used, but provision also has been made for producer gas, 20 Hughes producers of the Wellman-Seaver-Morgan Co.'s design have been laid out, 16 of which now are being erected. Four producers in a group take care of two furnaces. The turning mechanism of each battery of four is handled through clutches and shafting by a 25-horsepower General Electric continuous-current motor, direct-connected to a jack shaft by flexible coupling.

The coal for the producer plant, brought in by standard gage cars, is dumped into a concrete bin, whence it is taken by a Link-Belt elevator to a steel bin over the producers. From this bin it is drawn out into electric larries built by the Atlas Car & Mfg. Co. and distributed by them to charging hoppers equipped with an automatic weighing device by means of which it is fed to the producers.

The ashes from the producer are taken out through a tunnel by Oren-

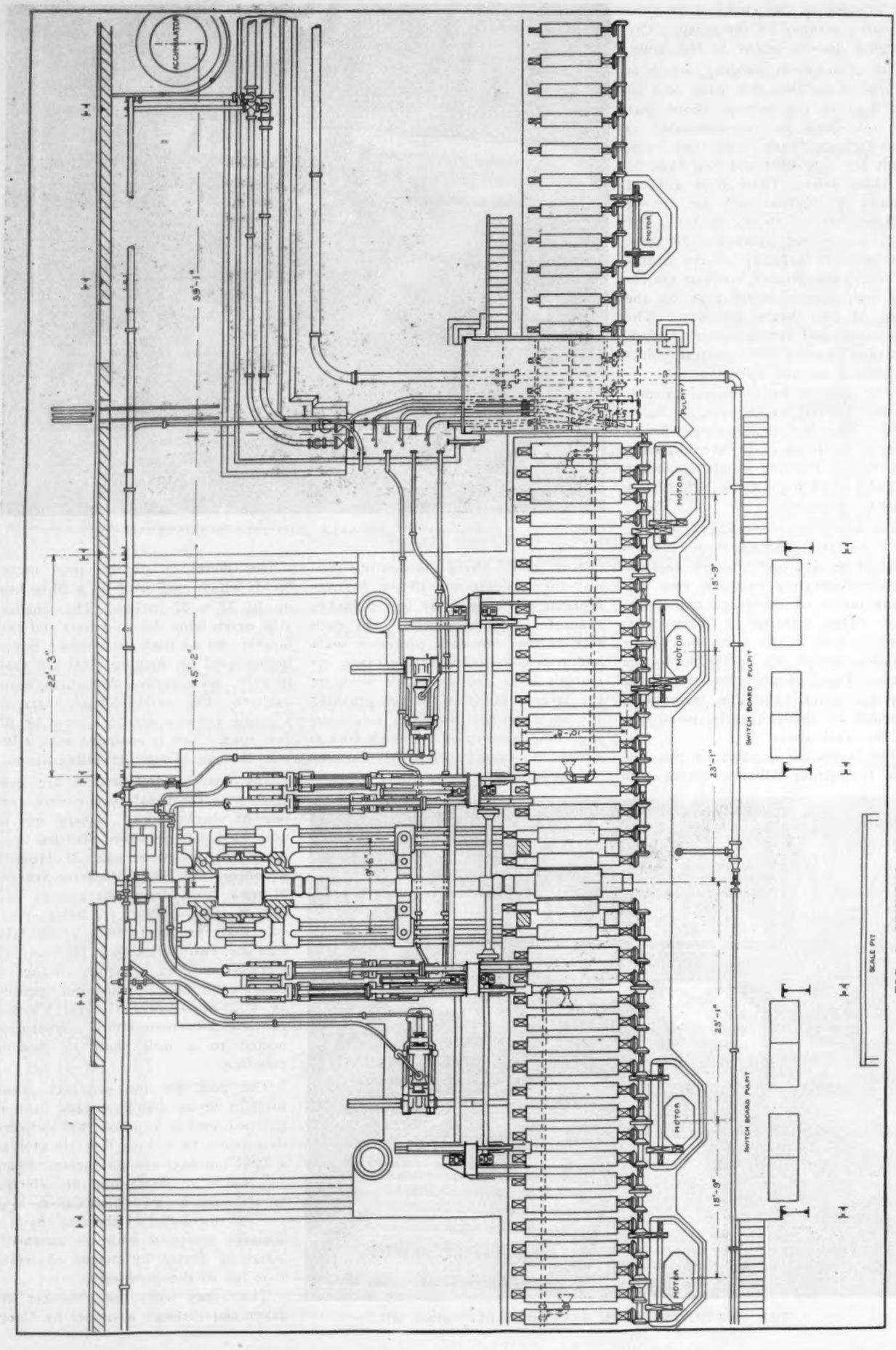


FIG. 9—GENERAL PLAN OF 40-INCH BLOOMING MILL, TABLES AND ENGINE HOUSE

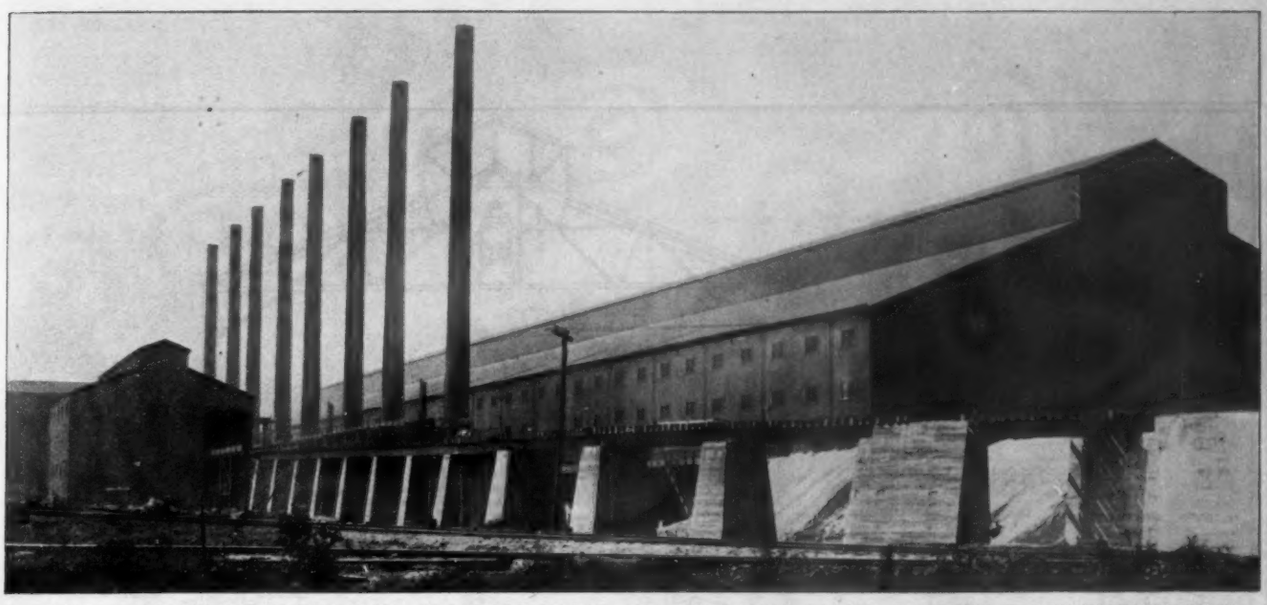


FIG. 10—OPEN-HEARTH BUILDING, PRODUCER HOUSE AND CALCINING PLANT, SHOWING TRACK ELEVATED ON CONCRETE PIERS

stein-Arthur Koppel electrically-driven ash cars and dumped to a Link-Belt ash skip, with Cutler-Hammer automatic push button control, which discharges to a concrete ash bin and thence by gravity to the same empties which originally brought in the coal.

On the pouring side and at the ends the open-hearth building is open around the bottom, as usual, and there is a monitor with ample ventilators. Under the charging floor a tunnel with tracks for standard railroad cars extends in front of the furnaces, enabling lining material, etc., to be conveniently handled.

The scrap drop is an open runway having a length of 100 feet, a width of 75 feet and head room of 50 feet under the crane. This is served by a Morgan 25-ton, 4-motor crane with 15-ton auxiliary hoist. The skull cracker is a 54-inch cast steel ball weighing 12 tons. This is handled by a 62-inch Cutler-Hammer magnet. There are five other such magnets used in the plant. The steel structure is designed to allow the future incorporation of two 25-ton cranes with 10-ton auxiliary hoists.

Calcining Plant

The dolomite for the open-hearth furnaces is treated in a calcining plant consisting of two 8-feet wet pans, one 9-feet dry pan and a crusher of the Dodge type, all furnished by Thos. Carlin & Sons, two cupola calcining furnaces and the necessary conveyor, buckets, etc., for handling the materials. Each of the mills and the crusher will be driven by a 30-horsepower motor and there is a 15-horsepower motor on the conveyor. For the cupola a Sturtevant blower driven by a 10-horsepower motor has been installed. The cupolas are of the company's own design, and a further feature worked out by the company's engineers is the construction of buckets which are lifted to the top and dumped through the bottom in charging the cupola, being handled by a crane. The calcining material is shoveled out of the cupolas into grinding pans. After grinding, it is carried by a bucket elevator to an overhead storage bin, from which it is delivered by gravity into bins of standard gage cars and hauled to the open-hearth. The calcining building is of uncommonly liberal proportions,

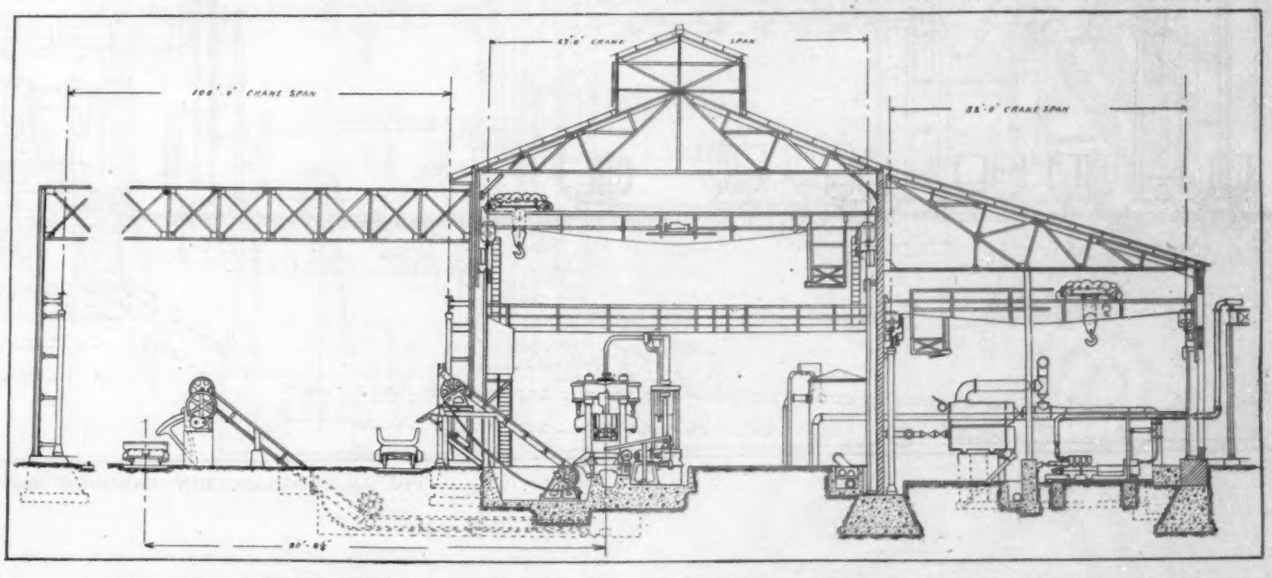


FIG. 11—CROSS-SECTION THROUGH BLOOMING MILL, SHOWING SHEARS, BLOOM AND CROP CONVEYORS

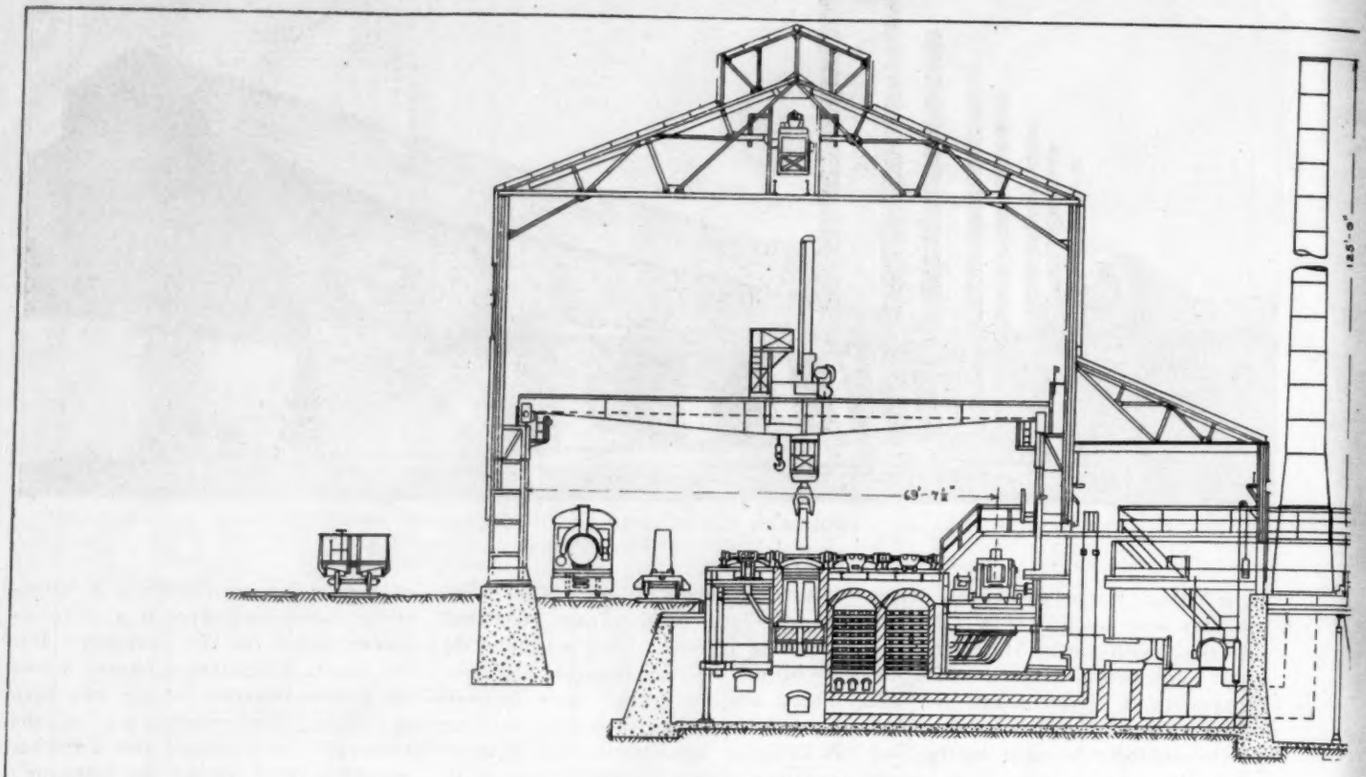


FIG. 12—CROSS-SECTION OF SOAKING

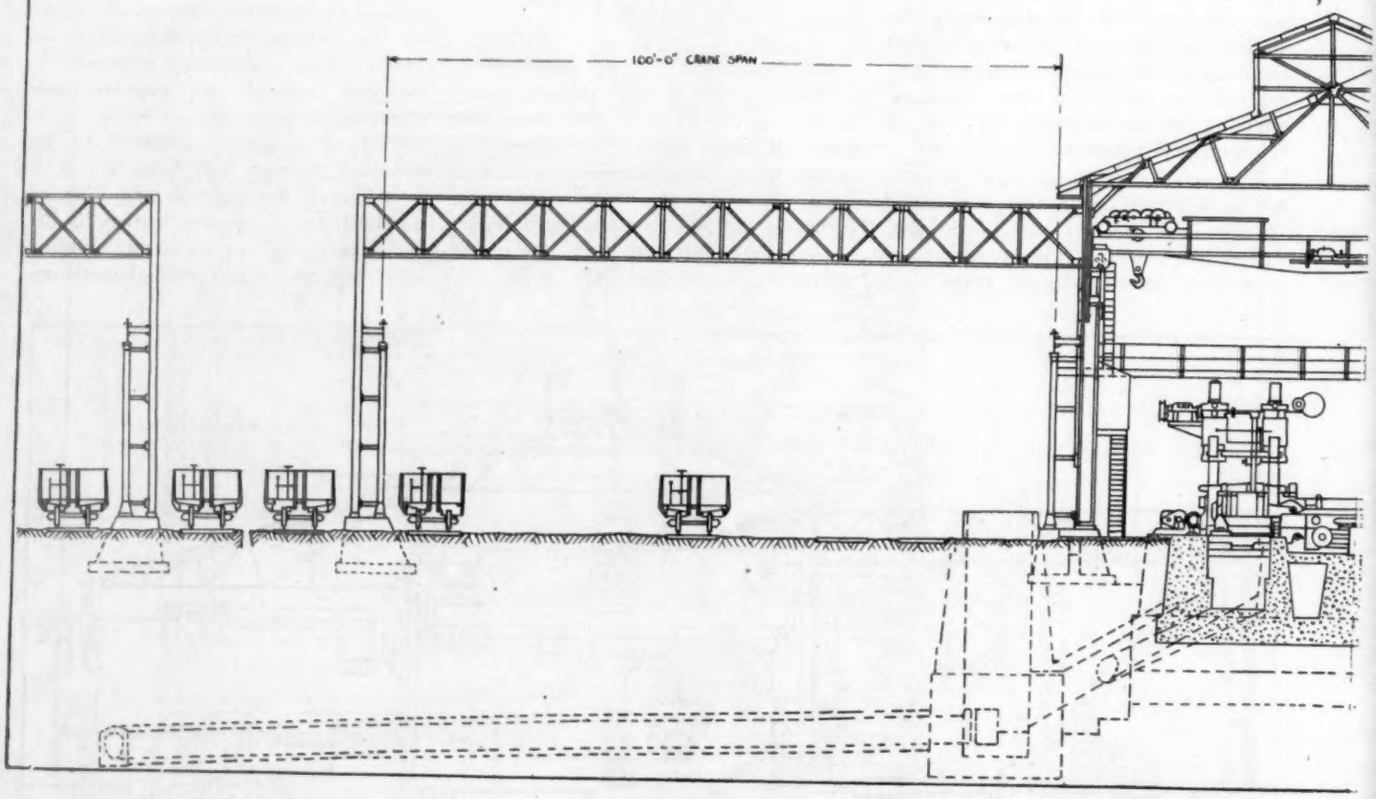
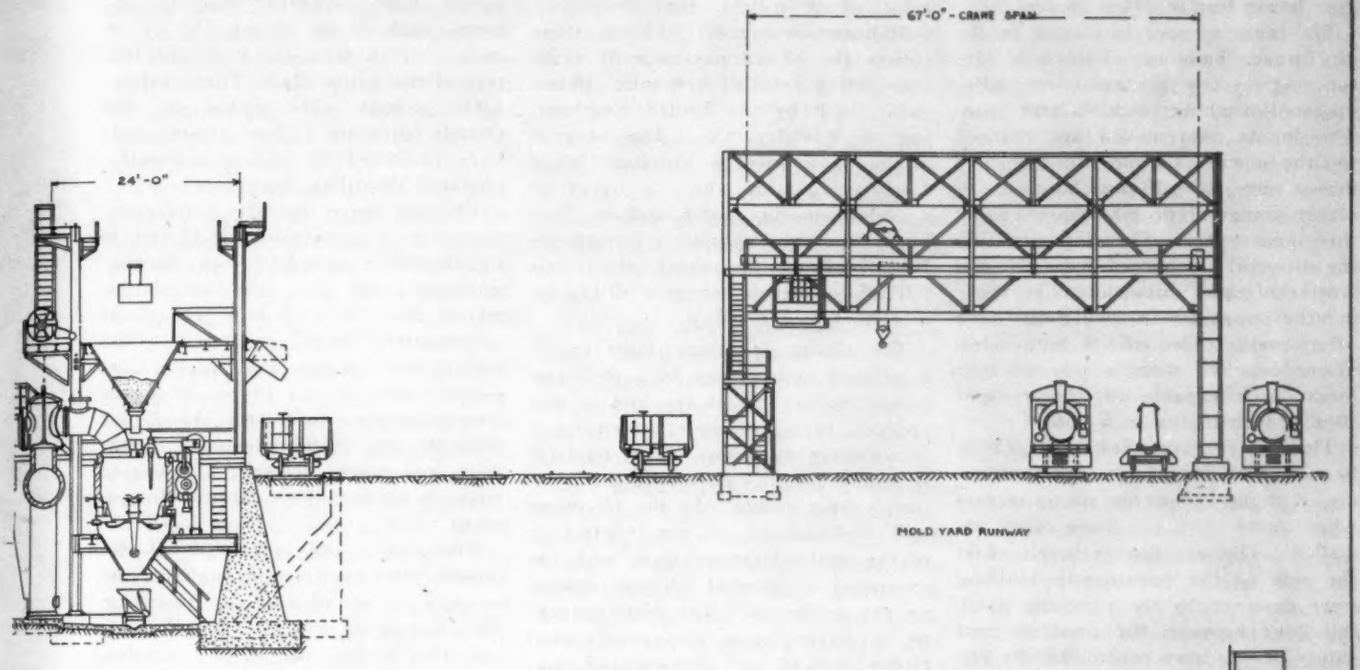
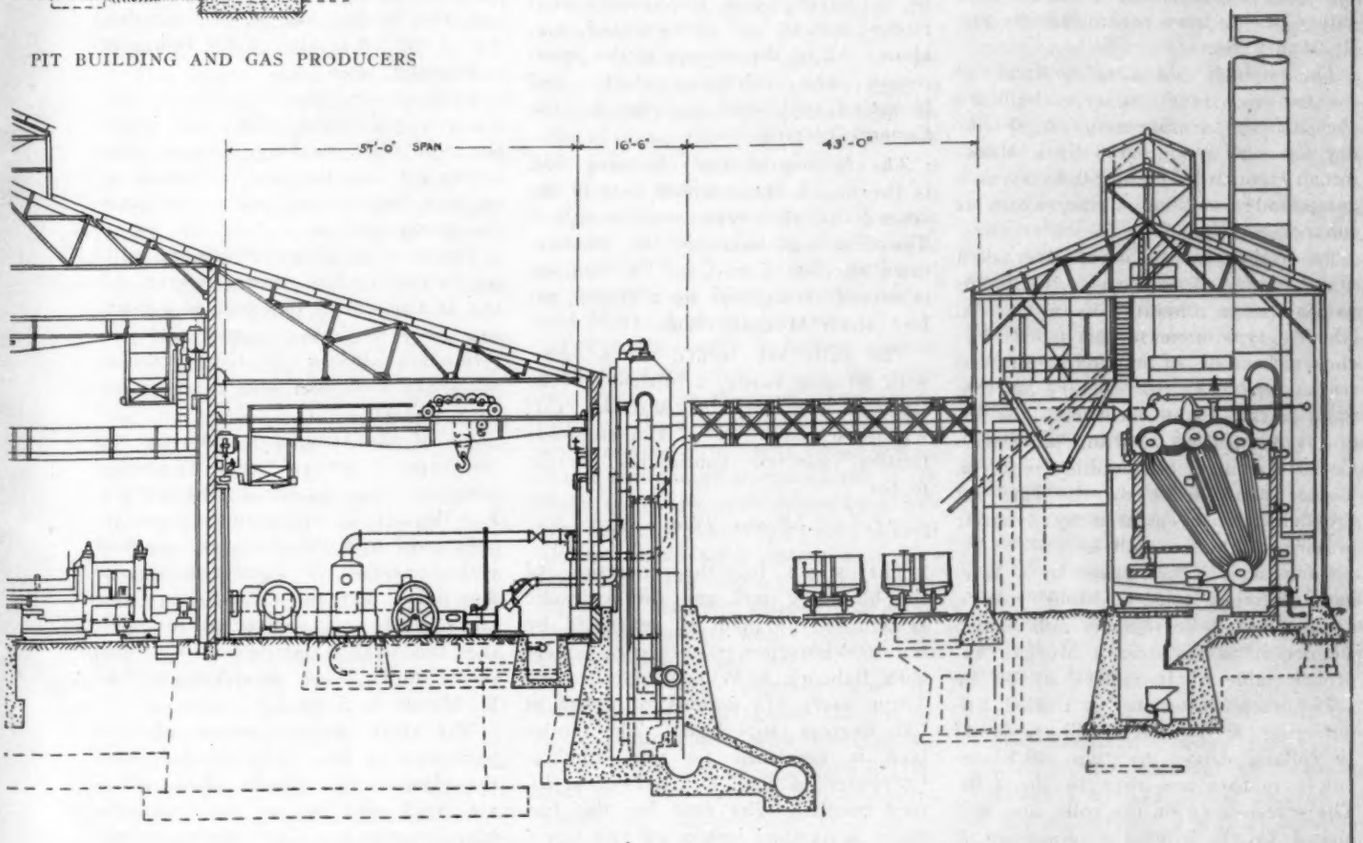


FIG. 13—CROSS-SECTION THROUGH BLOOMING



PIT BUILDING AND GAS PRODUCERS



MILL BUILDING AND BOILER HOUSE

being 143 feet long, 60 feet wide and with 41 feet effective headroom. A leanto increases the width to 71 feet.

The blooming mill buildings consist of a pit furnace structure, 356 feet long and 113 feet wide, the mill building proper, 311 x 72 feet, and an engine house leanto, 244 x 56 feet.

The ingot stripper is located in the pit furnace building. This is a 150-ton single screw Morgan, electrically-operated machine, with 76 feet span. The ingots as removed are charged to the furnaces, and subsequently drawn, by two 10-ton Morgan, 6-motor plunger type pit cranes having the same span. These cranes and the stripper are served by a 7½-ton Northern repair crane and, like those in the open-hearth building, have safety walks railed off on both sides. There are five soaking pits of four holes, each capable of taking eight 20 x 22-inch ingots to a hole.

The pit furnaces are arranged to be served by five Hughes gas producers, with provision for six producers when more furnaces have been installed. The gas houses here and at the side of the open-hearth building were designed by the company itself, the flues between the producer and valves having been constructed by the R. Munro Sons Co.

The 40-inch blooming mill is of the two-high reversing type, built by the United Engineering & Foundry Co., and is operated by a Mackintosh-Hemphill 44 and 60 by 70-inch compound reversing engine, which is run condensing.

From the pits the ingots are taken in an ingot delivery car of the company's design, operated by a General Electric type mine motor, which was chosen because of its adaptability to trucks operating on a very narrow gage track. From these cars the ingot is dumped to a tilting table with Cutler-Hammer automatic control. There is no brake on the car, but the delivery is regulated by dynamic braking in the controller.

Each ingot is first taken by a Morgan receiving table of four rollers, driven by a 30-horsepower mill motor. Thence it passes over a Morgan approach table of 16 rollers, driven by a 75-horsepower motor, a United Engineering & Foundry mill table of 19 rollers, driven by two 100-horsepower motors and then to the rolls. The screw-down on the rolls, also furnished by the United Engineering & Foundry Co., is actuated by a 100-horsepower motor. The mill is of the United Engineering & Foundry Co.'s standard design.

Emerging from the rolls, the ingot passes to a table of 19 rollers of the same company's make, which is driven by two 100-horsepower motors, thence to a Morgan run-out table of 16 rollers driven by a 75-horsepower motor, a Morgan intermediate table of 16 rollers driven by a 50-horsepower motor and a shear approach table of 16 rollers, also driven by a 50-horsepower motor. From these rollers the bloom passes a 20 x 20-inch Davy steam hydraulic bloom shear, built by the United Engineering & Foundry Co. The sheared bloom passes over a 16-roller United Engineering table which is driven by a 30-horsepower motor and is tilted by an hydraulic cylinder. Immediately on leaving the shear, the crops fall off to a crop conveyor driven by a 30-horsepower motor.

The bloom or billet passes on to a push-off table driven by a 30-horsepower motor and at the end is discharged to a conveyor driven by a 50-horsepower motor. The push-off is a semi-rotating device of the company's own design. In the blooming mill building all of the control is of the Cutler-Hammer type, with the exception of General Electric control on the conveyors. The crop conveyor is driven by a compound-wound motor instead of series-wound machine. All of the motors in the open-hearth and calcining plants and blooming mill were installed by the General Electric Co.

The feature of the blooming mill is the bloom shear which is only the second of the type ever installed. The first was built for the Youngstown Sheet & Tube Co. The building is served throughout by a 50-ton, 67-foot span, Morgan crane.

The rolls are turned on a lathe, with 50-inch swing, furnished by the Garrison Foundry & Machine Co., which is driven by a 30-horsepower General Electric continuous current motor.

Power Plant

The steam for the operation of the blooming mill and the hydraulic system of the plant is generated by ten 604-horsepower Stirling boilers with Babcock & Wilcox superheaters. These carry 175 pounds of steam at 100 degrees superheat. The boiler feed is furnished by two Epping-Carpenter 16 and 10 by 24-inch duplex pumps. The coal for the furnaces is dumped into a pit and raised by a Link-Belt bucket system to a flight conveyor, which distributes it to hoppers above the boilers. From these it passes through down-comers to Green automatic chain grate stokers and is fed by them to the furnaces. The ashes are handled by an automatic skip hoist.

The blooming mill engine, previously referred to, exhausts to a Mesta 96-inch barometric condenser carrying 24 inches vacuum. In the same engine room there are two Snow compound high pressure pumping engines, each 24 by 40 by 7⅛ by 36 inches, which serve the hydraulic system of the entire plant. These deliver 1,000 gallons per minute at 600 pounds pressure. The steam ends have combined fly ball and directly-operated throttling governors.

The air pump for the condensing system is a Mesta machine, 12 and 34 by 31 inches, equipped with Gardner governor, and for the circulating water there is a 16-inch De Laval motor-driven centrifugal pump. The boiler feed pumps are Epping-Carpenter units 16 and 10 by 24 inches which supply water to the boiler through an 8,000-horsepower Cochrane feed water heater. The engine room is spanned by a 50-ton Morgan crane.

The piping and valves of all the power plant system throughout the works were installed by the Best Mfg. Co.; the piping has Van Stone joints and the header has welded nozzles. All of the oil is filtered for re-use in a Franklin filter.

An interesting feature of the blooming mill is a concrete tank into which the mill scale washes. This is open at the top and the scale is picked up by grab buckets and loaded into cars for transportation.

The new buildings of general utility, which replace those erected for the Midland Steel Co., include a foundry 240 x 34 feet, carpenter and pattern shop 165 x 32 feet, machine shop 240 x 38 feet and a laboratory 70 x 92 feet.

All of the structural work on the buildings, runways, etc., is being done by the American Bridge Co. For the mill sidings wrought iron has been used and the roofs are covered with concrete tile furnished by the American Cement Tile Co. The stack work was contracted for with the Treadwell Construction Co., and inside tanks were furnished by the R. Munro & Sons Co.

The steam for the power plant is generated in the 14 Rust boilers of the blast furnace engine plant, which are fired with waste gas from the blast furnaces. The steam is admitted through a 16-inch supply pipe to a header in the electric plant, from which it passes through a 10-inch feeder to a 5,000-kilovolt-ampere General Electric steam turbine unit, through an 8-inch feeder to a similar

3,125-kilovolt-ampere unit, and through a smaller feeder to a Mesta 14 and 36 by 36-inch air pump serving, in common, the 108-inch and 92-inch Mesta barometric condensers to which the turbines exhaust.

The turbo-generators are three-phase, 25-cycle, 6,600-volt machines, Y-connected, with the neutral grounded through resistance. The turbines take steam at 175 pounds pressure, 100 degress superheat, and each operates at a speed of 1,500 revolutions per minute.

The circulating pumps for the condensers are 18-inch and 16-inch De Laval units at 8,400 and 5,700 gallons per minute capacity, each driven by a 65 to 90-horsepower variable speed motor, shunt-wound for 450 to 800 revolutions per minute. These serve the larger and smaller condensers, respectively.

The alternating current, taken from the generator terminals at 6,600 volts, passes to a double bus-bar switchboard system and thence to the feeder lines serving the various motor circuits, all alternating current motors being operated at the primary pressure mentioned. Distribution of these lines is through an underground conduit system consisting of Johns-Manville 4-inch fiber conduit.

The power plant contains a sub-station which includes two 500-kilowatt General Electric motor generator sets, each consisting of a 6,600-volt synchronous motor and 250-volt direct current generator operating at 500 revolutions a minute. These are to supply the direct current used in the plant for auxiliary service. The direct current feeder lines are led through conduits in the same trenches as the alternating current lines. Excitation for the turbo-generators is furnished by two 50-kilowatt induction motor generator sets.

The station is equipped with oil switches, lightning arresters, Tirril voltage regulators and all of the accessories of an up-to-date electric power plant. Provision has been made in the dimensions of the building and in its arrangement for three additional steam turbine sets, with the necessary auxiliaries.

A second sub-station will be located in the plow mill and also will be equipped with two 500-kilowatt synchronous motor generator sets. The use of these synchronous machines will enable unity power factor to be closely approximated throughout the alternating current system of the plant.

In this connection, it is interesting to note that the plow mill will be driven by a 3-phase, 25-cycle, 6,600-volt, 150-revolution per minute induction motor, double-wound for 1,200 or 1,600 horsepower. The motor will actuate, through rope drive and sheave wheels, two sets of double-duo rolls and a single two-high stand of finishing rolls, the stands turning, respectively, 60, 40 and 40 revolutions per minute. Cutler-Hammer automatic control will be used throughout the mill.

The old electric plant of the Midland Steel Co. is being temporarily utilized, and the buildings will be retained, with an extension 42 x 35 feet to the blast furnace boiler house and 100 x 76 feet to the power house proper.

The coal used in the plant is obtained from the Crucible Coal Co.'s mines, lying mainly in Green county, Pa., and brought down on the Monongahela and Ohio rivers to unloading hoists on the river bank of the company's property. From the hoist bins it is drawn off into electric larries operating on a trolley system and brought around to a pit. From this it is taken by the same Hoover & Mason bridge that is used for handling ore, and loaded on cars for distribution.

The transportation system of the plant, all tracks being standard gage, is exceptionally complete and has been developed along the lines of regular railway practice. In moving billets, use is made of a rack car.

For various purposes about the yards, and in construction work, the handling of material has been greatly facilitated by four Brown Hoist and one Industrial Works locomotive cranes.

The water supply is derived entirely from the Ohio river, which the property fronts. On the bank of the river, there has been erected a pumping station equipped with two motor-driven, 20-inch centrifugal pumps of the R. D. Wood Co.'s type, each driven by a 550-horsepower, 3-phase, 6,600-volt General Electric wound rotor motors on a vertical shaft. The delivery of each pumping unit is 15,000,000 gallons in 24 hours. The pumps operate with a power factor approximating 90 per cent.

From the shore pumping plant, the water is discharged against 125 feet total head into a main with two branches, one of which goes to a water treating plant and the other to the condensing system of the blast furnace power plant.

All of the boiler feed water is taken through a water softening plant and filters with a capacity of 60,000 gallons per hour. This plant is designed on what is known as the "Wefugo" system and was constructed by the Wm. B. Scaife & Sons Co., Pittsburgh. It consists of three reaction tanks having a capacity of 165,000 gallons each and three sand filters, together with a fourth tank and filter for serving the town of Midland.

There is also a raw water reservoir with a capacity sufficient for a three hours' continuous supply of the plant, and two stand-pipes, one for raw water and one for purified water. These are used in the distribution of the water to various parts of the plant and they are supplied from a pumping station equipped with Epping-Carpenter centrifugal pumps, each having a capacity of 8,000,000 gallons per 24 hours, driven by Kerr steam turbines. There are also two Epping-Carpenter duplex 12 and 24 by 24-inch pumps, and two 18 and 16 by 24-inch Wilson-Snyder pumps. The last named are for use in supplying the town of Midland and also as reserve units, the Epping-Carpenter duplex pumps serving, however, as the first reserve for the steel plant.

The course of the condensing water is decidedly interesting. Raw water from the river, which circulates through the Mesta condenser in the blast furnace electric power plant, issues at a temperature of 90 degrees, the vacuum maintained in the condenser being 28 inches, and flows through an underground conduit system to the blooming mill power plant. There it issues at 130 degrees, the vacuum maintained being 24 inches, and also to the merchant mill, to be erected in the future, and blast furnace power plants where the temperature of issue is 126 degrees and the vacuum in each case 26 inches. From the blast furnace power plant it is returned to the water softening plant. There the high temperature of the water assists the reaction in the tanks. All sewage and drainage is through an extensive system of mains discharging to intercepting sewers which empty in the river below the plant.

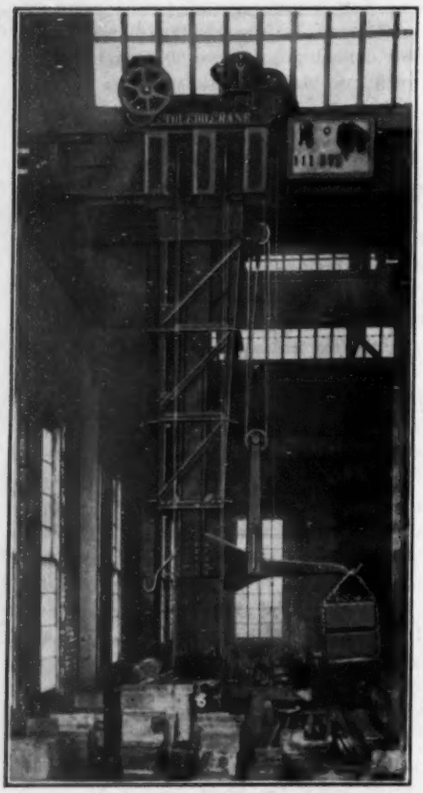
In addition to its works, the company owns a town site of 445 acres, which it is developing.

J. W. Dougherty, president and general manager, has charge of the construction and operation of the plant. Herbert Du Puy is chairman of the executive board.

The American Society for Testing Materials has published an Index of Volumes I to XII of the proceedings of this society which will be furnished at a price of $1.50 in cloth binding and $2 in half-leather binding. This index can be obtained either from The Iron Trade Review, Cleveland, or from Edgar Marburg, secretary-treasurer, University of Pennsylvania, Philadelphia.

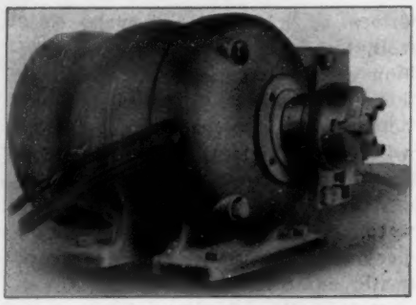
A Special Forging Plant Crane

In the accompanying illustration is shown a special crane built by the Toledo Bridge & Crane Co., Toledo, designed for service in a forging plant, which, as a rule, is accomplished by hand labor. The crane proper, including the trolley, crane girders and the bridge, are practically the same as those of any standard, three-motor, floor-operated crane. However, the mechanism for handling dies is of special design and is particularly adapted to this service. With this type of crane, dies weighing up to and including five tons require only the services of the crane operator, or the operator of the drop hammer



SPECIAL CRANE FOR HANDLING DIES IN A FORGING PLANT

in setting or removing dies. The vertical arm or plunger, to which the hoisting hook is attached, is raised and lowered to the hoisting tables and is held in position by roller guides in the structural frame. The hoisting hook is of special design and is made either of forged steel or annealed cast steel and is provided with a counterbalance so that when the crane is not in operation the hook drops back to the vertical position. An auxiliary hook is provided and the crane then can be used for ordinary service. This is the only crane of this type in use and has rendered efficient service in the plant of the National Supply Co., Toledo, where it is now in operation. If necessary, the crane can be equipped with an operator's cage.



MOTOR-DRIVEN POLISHING MACHINE

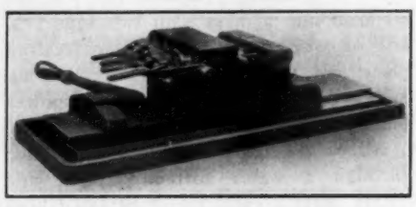
Motor-Driven Polishing Machine

A polishing machine designed for rapidly finishing small parts that can be held in the 2-inch scroll chuck with which the machine is equipped or the ½-inch spring chuck, is being manufactured by Forbes & Myers, Worcester, Mass. The machine can be furnished with a grinding wheel or buffing wheel on one end of the shaft, as illustrated, or with chucks on both ends of the shaft. The machine is motor-driven and is started and stopped by a lever at the side. The motor is of the squirrel cage induction type of one-half horsepower capacity. It can be used on two or three-phase, 60-cycle power of any voltage.

Milling Center for Fluting

The Bickford Machine Co., Greenfield, Mass., has extended the range of application of its milling centers to the fluting of machine screw taps. The taps, as shown in the accompanying illustration, are held by spring chucks, the point ends being supported in a bushing. The regular head center block is employed and the work is indexed by turning the crank through either a complete or half circle. The chucks are opened by raising the levers which are shown at the rear end of the block. The head block is operated forward by a lever after the taps have been tightened in the chucks, thus bringing the ends of the taps into the bushings.

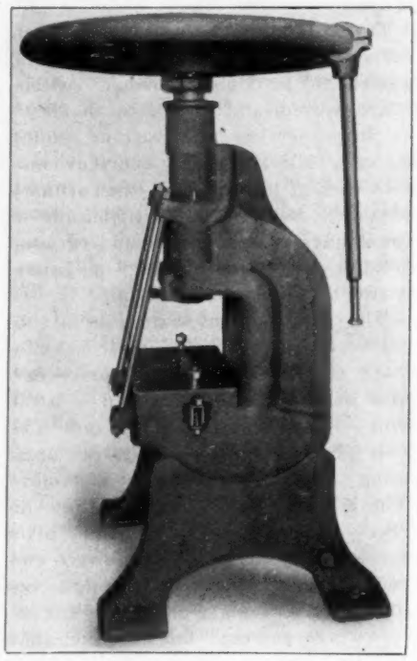
A small bell center inside the spring chuck takes the end thrust, also aiding to keep the tap from turning around in the chuck when indexing. An eccentric stud is used to tighten the spring chucks; this connects the levers with rods which run through the spindles of the head block. This attachment can be used on any milling machine.



MILLING CENTERS ADAPTED TO FLUTING MACHINE SCREW TAPS

Hand Screw Press

A hand screw press designed for tool room work, built by the Standard Machinery Co., Providence, R. I., is shown in the accompanying illustration. This machine has a capacity for dies that will blank work up to 16 inches in diameter. It is adapted particularly for punching



HAND SCREW PRESS FOR TOOL ROOM WORK

armature discs. The machine is equipped with a forged steel screw 3½ inches in diameter and a hand wheel, 4 feet in diameter. The thickness of the bolster plate is 2½ inches and the maximum distance from the bottom of the ram to the top of the bolster plate is 14½ inches. The distance between the gibs is 10¾ inches and between the uprights at the rear, 14½ inches. The weight of the machine is 3,000 pounds. To insure accurate alignment the press is equipped with tie rods. The top of the machine is provided with a special left hand thread adjusting collar to permit of turning the wheel continually to the left without acting against the collar thread. The frame is heavy and the machine is mounted on legs so that it can be inclined if desired.

STORAGE BATTERY TRACTOR WITH TRUCKS HANDLING MATERIAL AT A MANUFACTURING PLANT

A Storage Battery Tractor

For handling material in manufacturing plants, rolling mills, foundries, etc., and freight in warehouses, at railway terminals, and docks, electrically - propelled trucks, to a large extent, are replacing hand-operated vehicles. In the accompanying illustration is shown a storage battery tractor built by the Atlas Car & Mfg. Co., Cleveland, designed for this work, which has a drawbar pull of 300 pounds when loaded to capacity and will haul loads of 5 to 10 tons in trailers on ordinary, firm floors. The cost per ton mile for current is about ¾ cent, based on electricity at seven cents per kilowatt-hour, and one charge of the batteries is sufficient to operate the tractor, hauling trailers, throughout one working day of 10 hours. The tractor and trucks require no rails and may be used on any fairly smooth, solid floor. The wheels of the tractor are made of steel and are equipped with roller bearings and solid rubber tires. The platform is mounted on coil springs, which permits the handling of fragile material. The power is transmitted from the motor to the wheels by differential gears which permits the wheels to turn independently for rounding curves. The tractor has 24 cells of lead battery requiring 65 volts direct current for charging. If alternating current only is available, a 25 or 30-ampere mercury rectifier tube may be used to supply the charging current or a 25-ampere single phase motor converter. If direct current is available, 110 volt current may be used by interposing suitable resistance to cut down the voltage to 65 volts and the current to about 20 amperes.

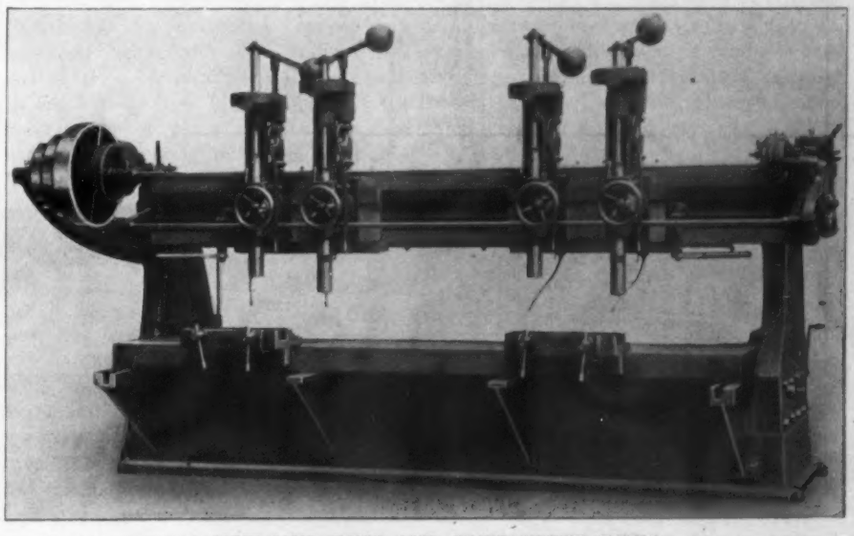
Steel Car Floats

Extensive use of steel plate is now being found in the construction of car floats for ferrying trains across rivers or estuaries. Four such steel floats, believed to be the largest now in use by any railroad, have been added to the New York harbor fleet of the New York, New Haven & Hartford railroad. They are 343½ feet long and 40 feet wide, drawing 5 feet when loaded. Each float has 17 watertight compartments and is practically non-sinkable. Recently two of these floats, lashed to one of the company's tugs, transported 50 loaded cars, the combined weight of cars and contents being 3,341 tons.

Mud Ring and Flue Sheet Drill

A machine for use in boiler shops for drilling rivet holes around mud rings and for cutting flue holes in flue sheets, built by the Foote-Burt Co., Cleveland, is shown in the accompanying illustration. The spindles are of the independent feed type, each being arranged with an automatic knock-off to the power feed and the quick return of the spindles is effected by a hand wheel located at the front of the head. Each spindle also is arranged with a clutch for stopping and starting and interlocking mechanism, so that the feed cannot be thrown in with the spindle stopped, or vice versa. By this arrangement some of the spindles always are drilling while the operator is setting the other spindles.

The spindles are arranged in pairs, being mounted on auxiliary cross rails, and they are adjustable on the latter to a minimum center distance of 8 inches. The advantage of this feed is that it is possible to set the spindles to the proper spacing of the rivet or flue holes and then to adjust two spindles along the main rail of the machine, thereby maintaining the proper spacing and eliminating the necessity of spacing each one individually. The spindles overhang the front edge of the base 8 inches to take care of mud ring work and the table is provided with chucks for holding the mud rings. The travel of the table is 36 inches. Three changes of power feed are provided, any one of which is instantly available by shifting a lever, and a three-step cone pulley and throw-out back gears effect six changes of speed.



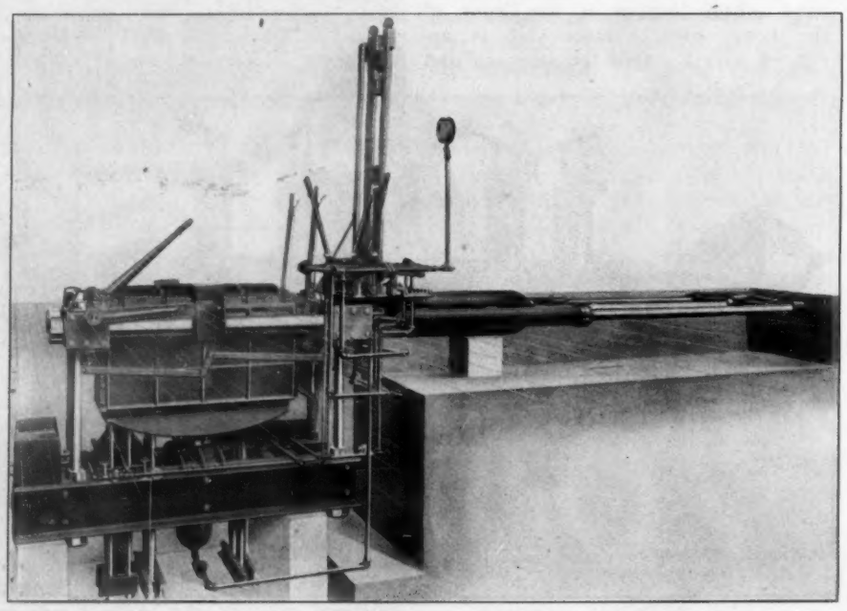
A NEW MUD RING AND FLUE SHEET DRILL

A 200-Ton Baling Press

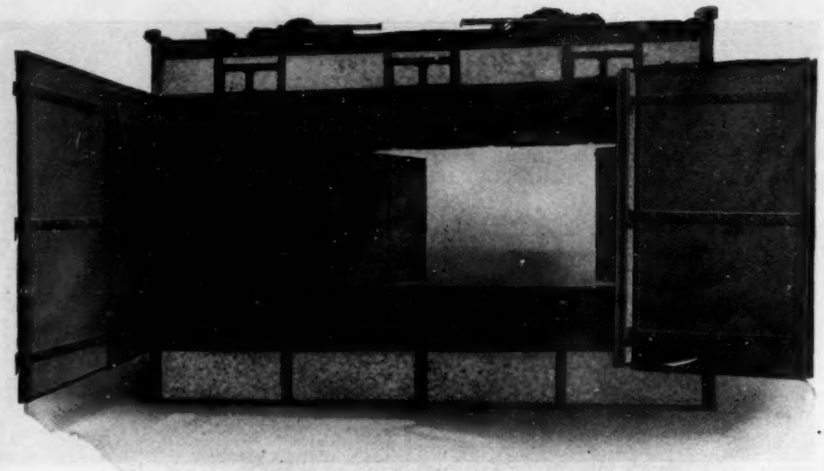
An hydraulically - operated, 200 - ton sheet scrap baling press, built by the Hydraulic Press Mfg. Co., Mt. Gilead, O., is shown in the accompanying illustration. It has a capacity for baling sheet scrap up to No. 10 gage and is so installed that the top of the box is on a level with the floor. This facilitates forking the scrap from the floor into the press. The box is 20 inches wide, 30 inches deep and 60 inches long. The normal size of a bale is 10 x 12 x 20 inches and weighs 250 pounds. The cast steel door forming the top of the box is counterweighted and can be moved easily with the hand lever. This door unlocks and opens automatically as the horizontal ram returns to starting position after the bale has been formed.

The press is equipped with two hydraulic cylinders, one for compressing the material into the top of the box and the other for compressing the material into the end of the box. To the horizontal cylinder is attached two auxiliary cylinders for returning the horizontal ram. The pressure platen forming the bottom of the box is locked into position by two bolts extending into each end of the platen, which are operated by hydraulic pressure after the platen completes its upward movement. This prevents the platen from tilting strains while the horizontal pressure platen travels across it during its movement in compressing the material in the end of the box. These lock bolts also are removed at the proper instant by hydraulic pressure.

In the head end of the lower platen, which forms the bottom of the box, is fitted a small ejecting platen to which is attached a 4-inch ram operating in an ejecting cylinder located on the sills in the head end of the press. As the lower platen travels upward it carries with it the ejecting platen and ram, which permits the 4-inch cylinder to fill from a pump reservoir by gravity. As soon as the scrap metal has been compressed into a bale, the door forming the top of the box opens automatically and the pressure is applied to the ejecting cylinder, which causes its ram and platen to rise, thereby forcing the bale out of the box on a level with the floor line and in position to be easily removed. The valve equipment required for performing all the operations is controlled by an interlocking device which compels the operator to throw each valve lever in its proper turn, it being impossible to operate in any other manner. A tell-tale board with graduations and indicator weights governed by cables attached to moving parts of the press point out to the operator the position, at all times, of the vertical and horizontal pressure platen.



A 200-TON HORIZONTAL SHEET SCRAP BALING PRESS



GAS-FIRED OVEN FOR BAKING LARGE CORES

Core Oven for Large Work

In the accompanying illustration is shown a core oven for large work built by the Oven Equipment & Mfg. Co., New Haven, Conn. It will be noted that it is equipped with doors at both ends to permit of the charging of the cores at one side and their discharge at the opposite side of the oven. This arrangement greatly facilitates the handling of cores and while the baked cores are being removed, green cores can be charged into the oven. The oven is 20 feet long and the door openings, both front and rear, are 15 feet wide and 10 feet high. The oven is heated by an enclosed flame, positive pressure gas burner, the air supply for which is forced through it by a positive pressure blower. The superheated air passes through a series of discharge heads and then through the floor of the oven, which consists of perforated steel plates. The air pressure is sufficient to insure positive circulation throughout the oven even when it is loaded to its full capacity. The four walls and the top and bottom of the oven are insulated with sheets 2 inches thick. These are formed of built-up corrugated asbestos boards, the corrugations in successive layers extending at right angles to each other. The insulation is held in place by thin steel plates both inside and outside, the latter plates being galvanized. The cores are carried into the ovens on three overhead trolleys and stacked on the oven floor plates for baking.

A 16-page pamphlet containing testimonial letters of electric pyrometers has been issued by the Brown Instrument Co., Philadelphia.

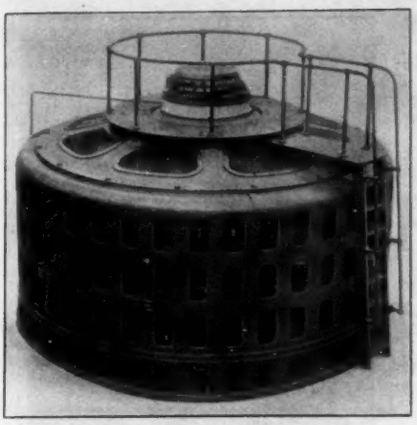


FIG. 1—A 12,500 KVA., 6,000-VOLT, 50-CYCLE GENERATOR COMPLETE

Generators for Hydro-Electric Plants

The operators of iron mining properties, furnaces, mills and finishing plants have been familiar in the past mainly with electric generators of the types driven by steam engines, gas engines, or steam turbines; but the development of hydro-electric power plants, such as those of the Penn Iron Mining Co., Cleveland-Cliffs Iron Co., Oliver Iron Mining Co. and Peninsular Power Co. on the iron ranges, or of concerns like the West Penn Electric Co., serving numerous plants in the Pittsburgh district, has compelled recognition of another distinct type, namely, the water-wheel generator.

The operation of modern hydro-electric power stations calls for a great variety of combinations of capacities and speeds. In general, however, there are only two types, the horizontal and the vertical. Those illustrated herewith are of the design built by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

The standard horizontal unit is of the two-bearing, coupled construction; that is, the generator includes shaft, two bearings and a bed plate, usually designed to allow for sliding the stator to one side in case access to either the stationary or rotating winding is desired. The stationary frame is made of a strong, rigid iron casting, into which soft steel laminations are dovetailed and securely fastened. Ventilating ducts are spaced at frequent intervals across the face of the armature punchings, allowing for ventilation of all parts in which heat is generated.

Form wound, interchangeable armature coils fit into parallel open slots punched in these laminations, and these coils are held firmly in place by means of fiber wedges. The coils are insulated and impregnated with fabrics and compounds of high insulating qualities.

No single type of construction will meet the varied requirements in rotor design; therefore, several well tested methods are employed. When comparatively low peripheral speeds are encountered, a cast iron spider with bolted-on, or dovetailed poles, is usually employed. For higher speeds, cast steel or steel plate construction are used. In the case of large, relatively high-speed machines, the difficulty of securing perfect castings may lead to the laminated rim structure.

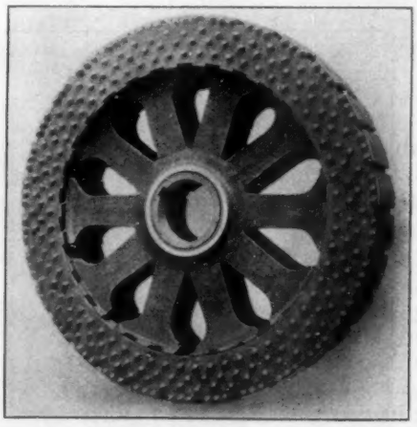


FIG. 2—LAMINATED RIM ROTOR WITHOUT FIELD POLES

All field poles are made of thin steel laminations riveted together with overhanging pole tips provided to support the field windings. Field coils are wound of heavy copper strap on edge, insulated in such a way that each individual turn is exposed to the ventilating air, and thus perfect radiation results. The coil is securely fastened between the rotating spider and the tips of the field poles by heavy coil supports.

Standard practice recommends that the generator be fitted with two guide bearings which are supported by brackets fastened to the stator frame, with the usual bed plate.

The roller, or thrust bearing, which supports the weight of the revolving part can be mounted on top of the generator frame between generator and turbine or underneath the turbine. In the former case, the frame must be made heavier than where it has only to support the stator punchings, winding and guide bearings. This bearing supports not only the rotor of the generator, but also the turbine runner, and in addition takes care of any unbalanced water thrust. A rigid cast iron frame, into which soft steel laminations are dovetailed, forms the basis of the stator.

Form-wound, interchangeable armature coils are held in open slots by means of fiber wedges. The coils are vacuum-dried and impregnated before the outside insulation is applied. In case of the failure of a water-wheel governor to act, the rotating part of both water-wheel and generator are subjected to unusual stresses, due to the overspeeding of these parts. The rotors here illustrated, however, are designed for the maximum obtainable speeds, which result in such instances. These overspeeds vary from 50 to 100 per cent.

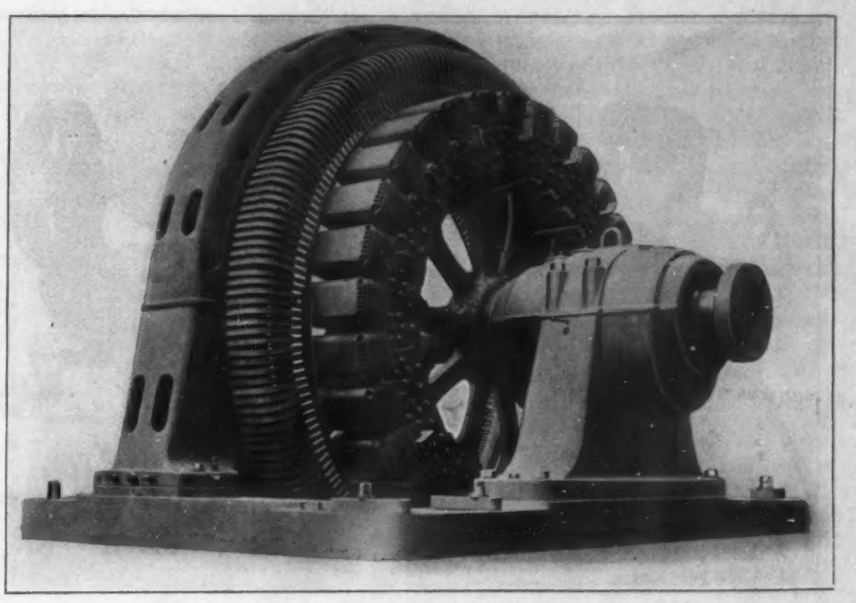


FIG. 3—METHOD OF SLIDING STATOR TO ONE SIDE

There are several designs of rotors. Comparatively low peripheral speeds may permit the use of a cast iron spider with either bolted-on or dovetailed poles. A higher speed generator demands an entirely different construction. For such work, cast steel or rolled steel plates are often used. In case of very large machines, it may be difficult to obtain perfect

castings, and here the laminated rim is ordinarily employed.

The improvements represented by the types of construction shown, as compared with those of only a few years ago, are important because with better turbine design and the economical transmission of current for long distances, they aid materially in the utilization of many water powers formerly considered impracticable of development or inaccessible.

Mill Controller Switches Improved

The rapidly increasing use in steel mills of automatic systems of control for the ingot buggies, tilting tables, conveyors, etc., has compelled giving more attention to the magnet switches used with these controllers. A new line of switches, manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for both direct and alternating current, present some interesting and novel features.

These switches are of the clapper type, so arranged as to be opened by gravity, with positive action assured by an auxiliary spring. Direct current switches, both shunt and series, are single pole. For alternating current the designs are two or three poles.

Each switch is mounted on an individual slate base.

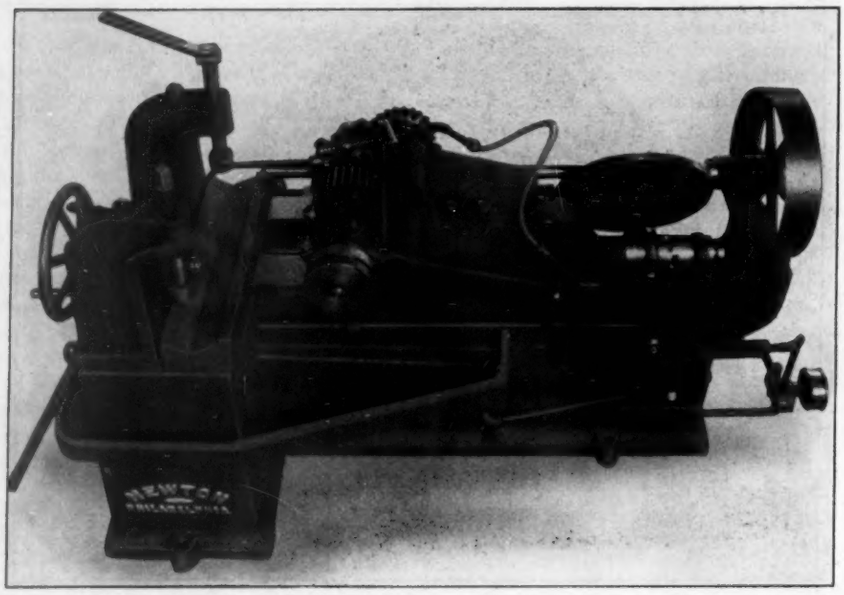
The wearing parts, such as contacts, arc shields, etc., are in general the same for all switches of the same capacity, thus reducing the number of repair parts to be carried in stock.

Care has been taken to minimize the destructive action of the arc, which, when formed, is not blown sidewise against the arc shield, but is guided upwards by an arcing horn and is then extinguished by the blow-out coil.

The contacts, in closing, have first a wiping action, then roll against each other, and are finally firmly pressed together. In switches of 250-ampere capacity and larger, the circuit is made and broken between copper and carbon, but in all cases the final contact is between copper pieces. The flexible copper shunts which carry the current to the movable contacts are welded to the terminals; hence there is no solder to melt, run down the shunt and stiffen it on solidifying.

Newton Cold Metal Sawing Machine

A 4,000-pound, cold metal sawing machine, with a capacity for cutting round stock up to 6½ inches in diameter in one cut, larger stock by turning bars, 10-inch I-beams of the square or miter cut in vertical position and for other stock or structural shapes within this range, has been designed by the Newton Machine Tool Works, Inc., Philadelphia. The machine shown in the accompanying illustration will carry a blade of any type, 22 inches in diameter, although the high speed design of the solid or inserted-tooth types are preferable. This machine has the same features of design as all of the larger Newton metal sawing equipment with the exception that the power quick return to the saddle is not considered necessary.



COLD METAL SAWING MACHINE BUILT BY THE NEWTON MACHINE TOOL WORKS, INC., PHILADELPHIA

The accompanying illustration clearly shows the cap bearings supporting the spindle on the side of the driving gear. The supports on the side of the driving pinion, the heavy design of the driving worm wheel, the overlapping gib construction of the saddle on the base and the taper shoes for the vertical and horizontal adjustment. A bearing is provided on each end for the feed screw to insure its operation in tension at all times to eliminate chatter. The two operating levers controlling the engagement of the feed and the rate of feed, and the hand wheel for the adjustment of the saddle all are located in front of the machine. The friction plate and roller give continuous feed variable in rate. The self-contained lubricating system includes a tank, pump and piping and delivers the lubricant at the point of cutting. The swivelling removable arch clamp base consisting of the work table bearings for the saddle, and the extension for the feed and driving mechanism, and the oil pan all are cast solid.

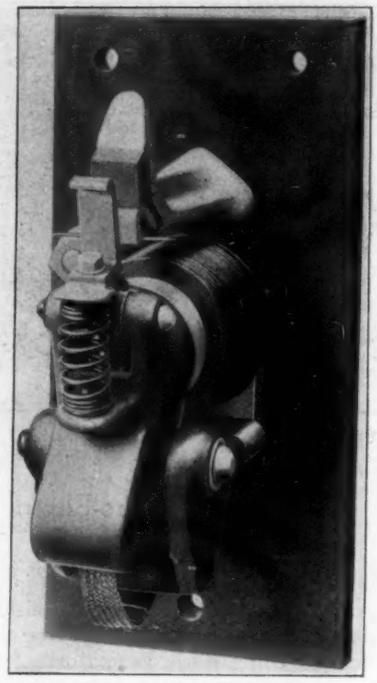


FIG. 1—FRONT VIEW OF 250-AMPERE, DIRECT CURRENT, MAGNET SWITCH

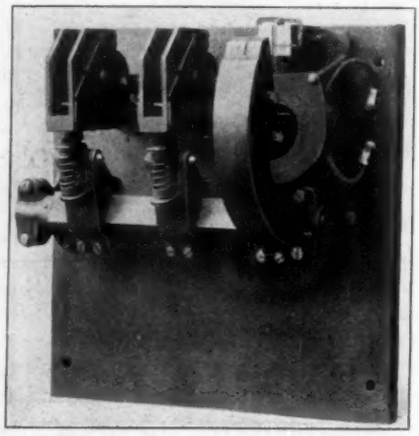


FIG. 2—FRONT VIEW OF ALTERNATING CURRENT MAGNET SWITCH

IRON AND STEEL MARKETS

Curtailment of Production by Mills and Furnaces

While Giving Men Employment to as Great an Extent as Possible—Prices on Various Finished Products Show Further Recessions—Coke is Weak

BY GEORGE SMART

Curtailment of production by furnaces and mills, while giving employment to men to the greatest extent possible, is the general program of manufacturers. Mills will be run on shorter hours with full forces, rather than continue at the full number of hours with fewer men.

Iron Ore

A 50,000,000-ton movement of iron ore from the Lake Superior region, which has been looked forward to for several years, will not be realized this year. In October, the fleet moved 6,521,884 tons, as against 7,010,219 tons for October, 1912, a decrease of 488,335 tons. It is doubtful whether the November movement will exceed 2,500,000 tons. The movement of Nov. 1 was 45,787,368 tons, an increase of 2,438,767 tons over the corresponding period of last year. If 2,500,000 tons are moved during November of this year, and the all-rail shipments are the same as last year, 785,000 tons, the total movement will be about 49,000,000 tons. It is expected that the ore movement will close earlier this year than ever before.

Foreign Competition

There have been some new developments in regard to competition from foreign countries under the new tariff. Buyers in Los Angeles, Cal., have been quoted German and Belgian billets at 1.81c, that city, structural material 1.76c and steel bars 1.61c. These prices figure back to equivalent of 1.15c, Pittsburgh, on plates, 1.10c on shapes and 0.95c on steel bars. These rates are considerably below present quotations for the domestic product. British pig iron is not yet on a competitive basis, except that English and Scotch hematite of standard low phosphorus quality are quoted from $1.50 to $2 below the present market at Philadelphia, and it is expected that the prices of the domestic product will be lowered to meet the competition. It is believed that the new price on tin plate of $3.40 per base box of 100 pounds will practically exclude the foreign product.

Pig Iron Production

The effect of dullness in the pig iron market with low prices is beginning to be felt in the production of pig iron and probably this month will see sharp curtailment in output. In October, production of coke and anthracite pig iron was 2,539,919 tons, a gain of 45,821 tons compared with September, but as October had 31 days, its daily average production was 81,933 tons, a loss of 1,204 tons compared with September. The loss in furnaces in blast was 14.

Pig Iron

The southern pig iron market, which has been characterized by strong prices in spite of limited demand, is not so strong, and in some cases the $11, Birmingham, basis for No. 2 pig iron has been shaded, although the explanation is made that it was done by agents cutting their commissions. In other parts of the country, the market is quiet, with little change in quotations. A little more activity is noticeable at Pittsburgh, where the Carbon Steel Co. bought 5,000 tons of basic for December, January and February delivery at about $13.25, valley. The Colonial Steel Co. purchased 1,500 tons of Bessemer and 1,500 tons of basic, while the American Steel Foundries bought 1,000 tons of basic for its Alliance plant. The National Tube Co. purchased 2,000 tons of gray forge.

Tin Plate

The new price of tin plate, $3.40, is $4 per ton less than was named when the buying for this year's consumption was started, but large buyers did not pay the $3.60, and it is thought that if $3.40 can be obtained from such buyers, the business will be on a very satisfactory basis. An independent company in the Pittsburgh district has already made a large sale on the new basis.

Shapes and Plates

More weakness has developed in the plate market and especially in the Cleveland and eastern districts, where sales are being made with considerable freedom at 1.25c, Pittsburgh, while buyers claim they can shade that quotation at least $1 on desirable business. The structural material market is also weak and prices range hardly $1 higher than for plates. Steel bars have declined to 1.35c, Pittsburgh, as the ordinary quotation, and probably 1.30c could be done on desirable business. Lower prices are ruling on nuts, bolts, rivets and shafting. Sheet bars and billets have also declined sharply. Billets can be had at about $21, Pittsburgh.

Coke

The market for furnace coke for delivery within the next 30 days is weak and nearly all makers of standard coke are quoting from $1.85 to $1.90. Low quotations have not brought out much new business. Foundry coke is also dull.

Pig Iron at Pittsburgh More Active

With Lower Prices Prevailing—New Price for Tin Plate—Furnace Coke Selling at Low Prices

BY C. F. WILLIAMS

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg.,
Pittsburgh, Nov. 4.

After driving plants at maximum capacity for more than a year, mill managers in all sections of the country now are cutting down working schedules to a considerable extent, and large bodies of men probably will be laid off shortly unless demand for iron and steel products improves. Every effort is being made to keep working forces intact as long as possible, but, with no immediate prospects for improved conditions in sight, labor probably will suffer. Price reductions continue to feature an inactive market. Tin plate has been reduced $4 a ton; pig iron has declined 50 cents a ton; semi-finished steel products are weaker; steel bars, following the lead taken by plates and shapes, have dropped to 1.35c; furnace coke is not commanding above $2 a ton and has sold as low as $1.85; scrap is selling at decidedly low levels, and other products are irregular. Some mills advise that specifying last month was heavier than in September; others report decreases.

Pig Iron.—The market is more active, with lower prices prevailing. The Carbon Steel Co. has bought 5,000 tons of basic for December, January and February shipment and 500 tons of prompt Bessemer; the Union Steel Casting Co. has taken 500 tons of prompt Bessemer; an Ohio foundry interest has bought 1,000 tons of basic; a local steel company has obtained 1,500 tons of basic and a similar tonnage of Bessemer, and a pipe manufacturer has purchased 2,000 tons of gray forge. Basic is quotable at $13.25 to $13.50, and Bessemer at $15.25 to $15.50, valley, with leading sellers refusing to shade the maximum figure for Bessemer. Gray forge is being held at $13.50. A sale of 1,000 tons of malleable, at $14, valley, is noted. W. P. Snyder's monthly averages for steel making grades, given elsewhere in this issue, show further declines, and the monthly report showing pig iron production, prepared by The Iron Trade Review, shows a decrease in the number of active stacks in this district.

Ferro-Alloys.—Small lots of English ferro-manganese are being sold at $50, seaboard, but German grades are obtainable at about $1 less than that figure. Ferro-silicon is unchanged.

Plates and Shapes.—Numerous small orders continue to be taken, and contracts are being specified against shortly after being placed. Plates are obtainable at 1.30c, and an attractive tonnage of shapes could be had at that figure. Eastern mills readily quote 1.30c, Pittsburgh, on either product. Some mills report increased specifications last month; others say a slight falling off was noticeable.

Sheets.—Mills are receiving many small orders and specifying continues liberal, but no large tonnages are being placed. Prices have not changed this week, although minimum quotations have become more general. The American Sheet & Tin Plate Co. is operating its serviceable mills at practically full capacity the early part of each week, but is cutting down operations to a considerable extent of Thursdays, Fridays and Saturdays.

Rails and Track Fastenings.—Eastern railways are beginning to close negotiations for 1914 rails, and managers of rail mills estimate that buying will be as heavy as a year ago. Spikes are not strong at 1.60c, but not enough tonnage has been sold to test the price. Other track fastenings are unchanged.

Billets and Sheet Bars.—Sheet bars are obtainable at $22 at some mills, although that figure has not become general. Heaviest consumers are under cover for the remainder of the year, and show no interest in attractive offers now made. Forging billets are quotable at $26, Pittsburgh.

Hoops and Bands.—Hoops are obtainable at 1.50c and bands at 1.35c for large tonnages.

Iron and Steel Bars.—Some of the larger manufacturers have sold steel bars at 1.35c the last ten days, and the market is quotable at a range from 1.35c to 1.40c. Iron bars are being held at 1.50c. Shafting is selling at 62 and 63 per cent off list.

Nuts, Bolts and Rivets.—Although manufacturers have now issued new prices, nut and bolt discounts are much lower than the nominal market, and those offered by The Iron Trade Review represent the price at which small tonnages are being sold. Rivets are softer than a week ago.

Tubular Goods.—Lower prices on lap weld sizes adopted a week ago are being well maintained. A local company, interested in gas fields in Ohio and Oklahoma, has placed orders for 300 tons of oil country goods for shipment to points in those states. Iron pipe discounts have not been changed. Some irregularity characterizes the market for boiler tubes.

Tin Plate.—On Nov. 3, the American Sheet & Tin Plate Co. opened its books for future tin plate, quoting $3.40, base, or $4 a ton less than the price obtained for material shipped this year; terne plates were reduced $3 a ton. Independent makers have adopted similar quotations. The present price, it appears certain, will prevent importations along the eastern seaboard, and manufacturers believe they can check any contemplated invasion on the Pacific coast. Tin plate at Swansea, Wales, is selling at about $2.91. To import this material at New York a consumer would pay $3.54, New York seaboard, which includes a 44-cent duty; 11 cents for shipping and about 8 cents for insurance and brokerage fees. Tin plate made in this district can be delivered in the New York metropolitan district for $3.57, and with the many advantages of patronizing domestic manufacturers it is not probable consumers will change their sources of supply.

Wire.—In this district, prices of wire products are being held firmly, and the market is considered more satisfactory than for several months. Nails are selling at $1.60 and plain wire at $1.40.

Wire Rods.—The bulk of the tonnage is commanding $26.50 and $27, although some sales have been made at $26, Pittsburgh.

Coke.—Pickands, Mather & Co. have bought 12,000 tons of furnace coke for November shipment to Toledo, O., and 10,000 tons for similar shipment to Erie, Pa. Furnace coke, for spot or short contracts, is quotable at $1.85 to $2, ovens, and foundry coke is listed at $2.50 to $2.75, ovens. The Lackawanna Steel Co., which controls coke plants in Washington county, offered about 30,000 tons for November shipment a week ago. This tonnage, which seldom figures in the open market, offsets that offered the last three months by the Hostetter-Connellsville interests, which has been withdrawn. The Connellsville Courier for the week ending Oct. 25, says production was 385,670 tons, an increase of about 6,000 tons compared with the week before.

Old Material.—Lower prices have come out on all grades, but the market has not yet sagged to the low levels prevailing at Cleveland and Chicago. Heavy melting steel is listed at $11.75, although some consumers claim material can be had at $11.50

Prices Still Tend Downward at Chicago

Orders Not Large Enough to Test the Market —Buying by the Railroads Disappointing

BY H. COLE ESTEP

Office of THE IRON TRADE REVIEW,
1521-23 Lytton Bldg.,
Chicago, Nov. 4.

Sentiment in the Chicago market shows very little change and prices are still on the down grade. One of the leading independent mills is now quoting 1.30c, Pittsburgh, or 1.48c, Chicago, on plates, shapes and bars. This price represents the market for finished materials except that attactive business would undoubtedly lead to further shading in the quotations on plates. The volume of business now coming to the mills is not sufficient thoroughly to test the market. While there has been some railroad buying and a fair amount of car business, it cannot be denied that the aggregate of railroad purchasing is far below normal. The difficulties in the west, at least, seem to be economical rather than political.

Pig Iron.—Only a ripple of activity stirred the Chicago market last week. A prominent buyer in East St. Louis purchased 2,000 tons or more of malleable Bessemer, of which about 500 tons was obtained by local furnaces. The price of the Chicago iron was $16.50, delivered. The bulk of the tonnage for this order will be furnished by eastern furnaces which were able to make better quotations. The Western Electric Co. is in the market for 100 tons of high silicon iron. This grade shows no change in price, $17 at the furnace, equivalent to $19.40, Chicago, being the ruling quotation. On charcoal iron, the market so far has not been affected by the failure of the Lake Superior Iron & Chemical Co. Rogers, Brown & Co., exclusive sales agents for the pig iron output of the involved corporation, announce that there will be no change in their relations with the company and that all contracts will be fulfilled as usual.

Merchant Bars.—Covering both iron and steel bars, one of the prominent independent producers in this territory reports that its October business was appreciably in excess of September. In general, however, there has been so far no revival in buying and prices seem to be still on the downward grade. Some of the local manufacturers believe that it is illogical to quote steel bars higher than plates and shapes and they are therefore willing to accept bar business at 1.48c, Chicago, equivalent to 1.30c, Pittsburgh. This price has not stimulated business to any extent. Bar iron has reacted slightly from the low point and minimum quotations are now 1.17½c, Chicago. This is an advance of $1 a ton over the lowest figures that have appeared. Only one of the iron bar producers in this territory is operating at anything near capacity. Shafting continues irregular and discounts are being shaded.

Plates and Structurals.—There has been some miscellaneous buying from railroad sources, but the aggregate volume of business remains far below the normal capacity of the plants in this district. Plates are quoted nominally 1.48c, Chicago, but there is practically no doubt that attractive business would bring out prices equivalent to 1.25c, Pittsburgh. Owing to a light demand, structurals have sagged until they are now practically on a par with plates. There is practically no structural business coming in from the railroads and only a fair amount from general sources.

Rails and Track Fastenings.—The various western lines which are reported to be in the market are still considering their requirements. Both the St. Paul and the Northwestern systems are negotiating. President Gardner, of the Northwestern, is reported as saying that his system still has 10,000 tons of unused 1913 rails on hand and it is doubtful whether further orders will be placed until February. Current quotations on track fastenings are lower, spikes being now quoted 1.65c to 1.70c and bolts at 2.10c to 2.20c in the Chicago market. Angle bars are being held at 1.50c, Chicago.

Bolts, Nuts and Rivets.—There is very little new that can be said covering the rivet situation. The leading producer in this territory is operating at about 70 per cent capacity. Structural rivets are quoted nominally at 1.90c, Chicago, but this figure is subject to considerable fluctuation and each order is treated individually. It is very difficult to sell carriage bolts except by giving concessions.

Sheets.—The open market quotation is now 2.18c, Chicago mill, for No. 28 black and 3.18c for galvanized sheets. The volume of business is fair, although consumers hesitate about buying heavily on a sliding market. The leading independent producer is making no contracts beyond Jan. 1, and it is hoped that the market may be boosted up after while.

Wire Products.—Lower prices on wire have had a disquieting effect, with the result that specifications are light. Practically every order is accompanied by an urgent request for immediate shipment, showing that jobbers' stocks are badly depleted. There is a good demand for agricultural wire from the northwest.

Cast Iron Pipe.—With the exception of 150 tons obtained by independent interests at Oxford, Kan., there were no lettings of consequence last week. Routine business is fair and prices are being maintained largely through the influence of pig iron quotations.

Merchant Pipe and Tubes.—The recent readjustment of iron and steel pipe prices has had practically no effect on the western market. Buying continues light and warehouse business is only fair.

Old Material.—The Chicago scrap market is absolutely dead. The few transactions that have come to light indicate that prices are still tending toward lower levels. About $13.30, Chicago, was recently offered for a small lot of iron rails. Heavy melting steel is down to $9.75 a gross ton and cuts of 25c a ton are noted on several other items. The Atchison, Topeka & Santa Fe railroad sold 3,800 tons on Monday, including 750 tons of No. 1 wrought, 500 tons of No. 2 wrought and 250 tons of No. 1 cast. In spite of fairly heavy sales, considerable tonnage is accumulating in railroad yards.

Will Discuss Convention Subjects

Members of the Detroit Foundrymen's Association who attended the convention of the American Foundrymen's Association in Chicago, Oct. 14-17, were so pleased with the exhibits and papers presented there that at the next meeting, Nov. 13, they are to have short papers pertaining to that gathering. The program will be: "Sand and New Sand Handling Devices," T. A. Leyshon, H. M. Lane Co.; "Molding Machines," James F. Miller, Ford Motor Co.; "Core Room Equipment," H. M. Lane; "Sand Blast and Cleaning Room Equipment," A. F. S. Blackwood, Michigan Steel Castings Co.; "Papers Read at the Chicago Convention," J. J. Wilson, Cadillac Motor Car Co.

The Hollister-Whitney Co., maker of freight and passenger elevators, Quincy, Ill., advises it will not need new machinery or equipment for its new plant, as it is fully equipped in the present location and all machinery will be removed to the new structures.

Low Prices for Plates in Cleveland

While Bars Are Not So Weak as Elsewhere—Iron Ore Shipments for Season Will Fall Below 50,000,000 Tons

BY GEORGE SMART

Office of THE IRON TRADE REVIEW,
Penton Bldg.,
Cleveland, Oct. 11.

Iron Ore.—The long dreamed-of movement of 50,000,000 tons of ore on the lakes in a single season will not be realized this year, as was hoped at the opening of the season. The gain of shipments over the corresponding months of last year was steady until September, when a slight slump occurred. During that month the fleet moved 7,258,413 tons, which was 28,817 tons less than the movement during September, 1912. In October, the slump became more pronounced, the fleet moving 6,521,884 tons as against 7,010,219 tons for October, 1912, a decrease of 488,335 tons. During November of last year the fleet moved 4,072,674 tons, but no such movement is expected during November of this year. In fact, it is doubtful whether the November movement will exceed 2,500,000 tons, as shippers are contemplating closing early. The movement to Nov. 1 was 45,787,368 tons, which is an increase of 2,438,767 tons over the corresponding period last year. If 2,500,000 tons are moved during November this year, the total movement for the year will be about 48,300,000 tons, as against 47,435,777 tons last year.

The ore movement will close earlier this year than in any year past. One shipper is already through at Escanaba, and has only a couple of cargoes left to move on Lake Superior. Other shippers are planning on sending forward final cargoes on Nov. 15. The Pittsburgh Steamship Co. will dispense with all outside tonnage before that date and will clean up with its own fleet immediately thereafter. There is little incentive in the general state of the iron market for any further movement of ore and the entire ore fleet will in all probability be in winter quarters by Nov. 30.

Following are the shipments by ports:

Port.	October 1912.	October 1913.
Escanaba	652,894	617,119
Marquette	514,753	369,293
Ashland	759,716	497,952
Superior	2,002,767	2,036,432
Duluth	1,686,324	1,689,427
Two Harbors	1,393,765	1,311,661
	7,010,219	6,521,884
1913 decrease		488,335

Port	To Nov. 1, 1912.	To Nov. 1, 1913.
Escanaba	4,663,879	4,914,342
Marquette	3,082,331	2,942,897
Ashland	4,382,877	4,056,754
Superior	13,100,043	12,846,823
Duluth	9,415,511	11,520,153
Two Harbors	8,703,960	9,506,399
	43,348,601	45,787,368
1913 increase		2,438,767

Pig Iron.—Low prices and limited demand are causing some reduction in output of pig iron and Canal Dover and Cherry valley stacks have been added to the idle list. It is probable that there will be still further curtailment unless conditions improve soon. Cleveland furnaces and firms with headquarters in Cleveland having furnaces in other districts, have, however, made a very good record of shipments up to Nov. 1, a record which a few years ago would have been considered remarkable for its large tonnage. Inquiries and sales are now at very low ebb. About 300 tons of Tennessee state iron have been sold in this city within a few days.

Coke.—Very low prices are being quoted on Connellsville furnace coke in the Cleveland market. Although about a week ago fully $2, ovens, was asked, $1.90 is now the usual quotation for standard furnace coke on short contracts and it is not difficult to buy at $1.85. One Cleveland firm has covered for 30 days' requirements for one furnace and 15 days' requirements for another furnace. Some of this coke was purchased at $2 and the remainder at $1.85. For spot delivery, probably even lower prices would be made on desirable tonnage. Even at the low prices now going, little activity in the market is noted. Foundry coke is also dull.

Finished Materials.—The feature of the finished material market in this district is the weakness of plates. While as high as 1.35c, Pittsburgh, has been done on a few carload lots, the ordinary quotation is 1.30c, while 1.25c, Pittsburgh, has been done and rumors are afloat of 1.20c having been paid by a company which purchased 575 tons for use in erecting Marconi wireless stations. This company is understood to be in the market for 5,000 tons and states that it has purchased only 575 tons. It may not place any further plate orders at the present time, but it is in the market for 450 tons of bolts. While Cleveland seems to be the weak spot on plates in the central west, it is not as weak as Pittsburgh on bars, and, in this city, 1.35c, Pittsburgh, seems to be the minimum, and sales have been made at 1.40c, although 1.30c, Pittsburgh, can probably be done on very desirable business. Sheets are extremely dull, in fact, business men of many years' experience say they have seldom, if ever, seen so little buying done in the sheet market. Bar iron continues extremely quiet, with prices varying according to points of delivery in competitive territory.

Old Materials.—Scrap prices in the Cleveland market are still on the downward trend. The term "market" is almost a misnomer, locally, for there is practically no buying by mills. One of the two large heavy melting steel consumers and two of the three rolling mills refuse offerings at any price. The other melting steel consumer is offering around $9.75, as against $10 last week. We revise quotations to $9.50 to $9.75 No. 1 machine cast is now quoted $10.50 to $11, a decline of 25 cents. Pipes and flues have dropped 50 cents to $7 to $7.50.

Large quantities of all grades of scrap are held all over the country, much being in the hands of small town dealers. Although prices are down to the lowest level in years, demand is not stimulated, for mills do not care to carry large stocks until the return of active business. Increased profits at such a time more than compensate for higher old material costs, when overhead and storage expenses are figured. Dealers also hesitate about going long, that is, buying up scrap and holding for a rise. In recent years, appreciable fluctuations in scrap prices have been in swings over perhaps a period of several years; carrying large stocks for a rise for such a time would mean not only tied-up capital for too long a period, in addition to storage and other costs, but would result in the dealer's practically remaining out of business during that time. With both speculative inducement and consuming demand absent, business is dull, and dealers are pessimistic, seeing nothing bright in the immediate future.

A. Rotter, former senior member of A. Rotter & Co., Cleveland, recently dissolved, announces he is now doing business under his own name, as follows: A. Rotter, 632 Leader-News building, Cleveland.

Southern Pig Iron Market Uncertain

With More Shading of $11, Birmingham, at Cincinnati—Agents Sacrifice Part of Commissions

BY S. G. BACKMAN

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg.,
Cincinnati, Nov. 4.

Pig Iron.—The general situation appears to be growing more and more uncertain as to minimum prices on both southern and southern Ohio No. 2 foundry iron, due principally to the continued inactivity in the market. It is known that a few small sales have been made recently at figures slightly below $11, Birmingham basis, and $14, Ironton, for deliveries to extend beyond the first of the year, but in the case of the former the reduction was brought about in practically every instance by agents cutting their commissions. The furnaces, with probably one or two exceptions, have not reduced their quotations, and even the minimum price of $11, Birmingham basis, is in the minority. The majority of southern stacks are still on an $11.50, Birmingham, basis, for any delivery until next July, and are making sales at this figure. However, if no special make of iron is required, a buyer could probably secure a considerable tonnage at $11. The general tendency is towards a slight reduction in prices.

Southern Ohio quotations are still $14, Ironton, for any delivery through the first half, but sales are sometimes being made below this figure, especially when there is very much competition on desirable business. This market does not appear to be as strong proportionately as the southern.

New inquiries are very scarce and almost always for small tonnages. Very little business is being done as far as new contracts are concerned, but shipments on old orders are going forward in a rather satisfactory manner, and not many, if any, of the furnaces either in the south or southern Ohio, are piling any iron. It also appears that most of this iron being shipped is being melted. There is an inquiry before dealers here for 1,000 tons, divided between northern and southern grades, from northern Indiana.

Coke.—The market is extremely quiet and a little uncertain as to immediate future developments. There is still a tendency to shade prompt shipment prices in practically all of the fields, as production is now equal or probably a little in excess of consumption in some instances, and operators as a general rule do not want to accumulate coke around the ovens. These lower prices, however, have not as yet induced any buying to speak of. Most of the foundries have contracts covering their requirements until next July, and they are therefore not expected to begin inquiring for more coke before the first of the year, if then. The furnaces are about due to begin buying, but as yet have shown no inclination of doing so. The Connellsville district appears to be the weakest because of the recent large production there. A number of dealers in the Wise county district are not offering much coke for sale at the minimum prices, and operators in the Pocahontas and New River districts appear to be only weakening on certain lots for spot shipment.

Finished Material.—Warehouse business appears to be rather spotted, as some of the larger houses here report business fairly good last week and others that they did not book any tonnage to speak of. Prices are undoubtedly a little weaker and most of the warehouses here have reduced steel bars from 1.90c to 1.85c, and plates and shapes from 2c to 1.95c. Iron bars are unchanged at from 1.80c to 1.90c. One large dealer here states that quite a tonnage of light structurals was contracted for last week, and structurals in general seem to have been selling about as well as anything else carried here. Aside from this business is pretty evenly distributed among the various other warehouse articles.

Old Material.—Conditions appear to have gone from bad to worse in the local scrap market. The long period of inactivity continues without any prospects of a betterment, as there is so much surplus scrap on hand it will be some time before it can be used up, even if a good buying movement should prevail, which is not likely to occur within the near future. It could now be safely said that there is no general level of prices, as dealers are simply offering almost any price for lots of scrap and are disposing of them in the same manner irrespective of what other dealers are asking for the same grades. Users are buying only in very small lots as the iron is actually needed, as the market is too uncertain to contract for any large tonnages.

HOLDING OFF

In the Buffalo District—Some Pig Iron Prices Decline.

BY FRANK R. DOLBEE

Office of THE IRON TRADE REVIEW,
Buffalo, Nov. 4.

Pig Iron.—The sales amounted to about 7,000 tons for delivery over the remainder of the current quarter. This total was reached largely through the placement of a single local interest. Buyers are still holding off and prices have softened in consequence on the higher grades. The rest of the schedule remains as quoted a week ago. The tendency of the furnaces of the district is to be firm on prices, but the continued absence of buying and possible offers of favorable tonnages at lower figures may alter the market. That remains to be seen. The schedules now quoted to consumers are apparently no inducement to them to enter the market with their inquiries.

Finished Material.—The placement of the week was up to last week. It is reported by the branch of the principal interest here that the October business was 50 per cent over that of the preceding month, while October was reported to be equal to September by the other interests.

Prices on structural vary from 1.35c, base, to 1.40c and 1.45c, according to tonnages and contract requirements—the higher prices being obtained on moderate tonnages and those for prompt delivery.

Old Material.—The principal interest is out of the market on heavy melting steel, causing activity of the local yards to fall off and the prices to soften on a number of the items in the list. Buffalo yards have been forced to seek an outlet in the eastern Pennsylvania and valley districts, causing the schedule to sag to the rates shown.

The Tousey Varnish Co., Chicago, advises it is spending about $30,000 in addition to its plant. Storage capacity is being enlarged, better facilities for packing and shipping and new offices are being provided. Equipment for heating, steel storage tanks and small furnishings remain to be bought.

The Kirk-Matlack Metal Co., Philadelphia, has increased its capital from $6,000 to $100,000.

Lower Price Levels Touched in East

Do Not Bring Out New Business—Offers of Low Phos Iron from England Cause Concessions by Domestic Makers

BY C. J. STARK

Office of THE IRON TRADE REVIEW,
326 Real Estate Trust Bldg.,
Philadelphia, Nov. 4.

Lower price levels which continue gradually to be established in the eastern iron and steel industry still fail to change the sluggish character of the market. Except in track fastenings, where a liberal inquiry has appeared, new tonnage offered or closed is limited. Further sales of plates and shapes at 1.25c, Pittsburgh, have appeared. Foreign materials continue to be quoted without resulting in sales, but in low phosphorus iron, offers of British metal at $1.50 to $2 below the recent market are forcing domestic makers to lower their prices.

Pig Iron.—Here and there, iron buyers are going ahead and placing orders for first half delivery, in some cases at a shade below ruling prices. In the main, however, neither buyers nor sellers seem inclined to force matters and the market is quite limited. Prices continue to soften slightly. A Kutztown consumer divided 3,000 tons of No. 2X among several makers at prices ranging from about $15.40 to $15.60, delivered, or $15 at the furnace. A Williamsport buyer asks 1,000 tons of No. 2X for first half. The Standard Cast Iron Pipe & Foundry Co. wants 6,000 tons of forge and No. 3 for January-February shipment. The Philadelphia market for No. 2X is regularly quoted at $15.75 to $16, but this level can be shaded. Virginia iron is moving slowly at $13, furnace, for No. 2X. Consumers who have been figuring on No. 3 Middlesbrough, English, iron have offered to sell portions of cargoes at $15.20 at Philadelphia docks. Though this price on Middlesbrough iron can be shaded considerably, the chances for importation apparently remain remote. English and Scotch hematite of standard low phosphorus quality, however, is being offered at $20.50 to $21, docks, equivalent to $21 to $21.50 to consumers' plants in the Philadelphia district. This price under-quotes by $1.50 to $2 the present market of $23, Philadelphia district, on domestic low phosphorus iron of similar quality. The domestic level has not been tested out recently by sales and it is expected that several large negotiations now under way will bring a considerable reduction in the price to meet this foreign competition. A negotiation for 1,500 tons of Bessemer, upon which both domestic and foreign prices have been quoted, remains unsettled. Basic iron in the east is lower for prompt delivery. Several thousand tons have been sold for early shipment at $15, delivered. A Cumberland steel maker asks 1,000 tons of basic.

Iron and Steel Bars.—Importers in this district have arranged for the bringing in of small quantities of German rounds to test out their use for concrete purposes. If the bars prove suitable they will be offered freely to the domestic trade. Steel bars remain quiet, but prices are unchanged at 1.40c, Pittsburgh. Considerable additional tonnage for Panama is expected to be offered soon. Bar iron is easy at 1.25c to 1.35c, eastern mill.

Plates.—It is now established that some selling of plates at 1.25c, Pittsburgh, is being done for eastern delivery. A local buyer closed for about 500 tons with a Pittsburgh mill at this price, or 1.40c, Philadelphia, and a ship yard took 600 tons at about the same price, it is reported. The round tonnage of car plates given to an Ohio maker recently by the Norfolk & Western railroad, as reported, is understood to have been done on an equivalent of 1.25c, Pittsburgh, or 1.40c along the line of the railroad. Eastern plate makers usually name 1.30c to 1.35c, Pittsburgh, for their schedule. New orders remain backward. The New York Ship Building Co. has taken a steel car float and a barge for the Pennsylvania railroad.

Structural Shapes.—A price of 1.30c, Pittsburgh, or 1.45c, Philadelphia, is now being done quite freely in this district by eastern and other makers. In exceptional cases, this price has been cut to 1.25c, Pittsburgh. The large order for car shapes recently placed by the Norfolk & Western railroad with two Pittsburgh makers was taken at 1.25c, Pittsburgh, it is understood. Conditions relatively are quiet, but some eastern mills booked a slightly larger tonnage in October than in September.

Sheets.—Lower prices have brought out a little better tonnage of heavy sheets and the leading maker in this district has all its mills running full this week. Prices are easy, 1.45c, Pittsburgh, or 1.60c, Philadelphia, having been done, although 1.50c, Pittsburgh, is the common quotation for No. 10 gage blue annealed.

Semi-Finished Steel.—Continued offers of German billets on the basis of $22, seaboard, for 4 x 4-inch steel are being made to eastern consumers, but no sales have resulted. It remains well demonstrated that buyers will pay from $1 to $2 a ton higher for the advantages in quality and geographically of domestic billets. Consumers in Scranton and Richmond were among those lately approached by foreign sellers. The Richmond buyer closed with a domestic maker for 250 tons of small billets at $22, Pittsburgh, or lower. Eastern makers quote rolling billets at $24 to $25, delivered this district. Reports to the east from Pittsburgh indicate $21 there could be done on a tonnage.

Old Material.—Cancellations were numerous Nov. 1 of undelivered portions of orders taken for October shipment, these growing out of the market's steady decline in recent weeks. The price slump continues and buying is quiet. Small purchases of heavy melting steel have been made by dealers at $10.50, delivered, and steel works have taken further tonnage at $10.75, delivered, the price they now offer. An eastern buyer has taken several thousand tons of rerolling rails at $13.50, delivered.

Building Forge Plant

The Atlas Drop Forge Co., Lansing, Mich., advises it is building a new plant, contracts for construction having been let to the Wisconsin Bridge & Iron Co., Milwaukee. The main buildings, of reinforced concrete, steel and glass, are the office and machine shop, 66 x 203 feet, forge shop and power house, 120 x 450 feet, and a heat treating, pickle and pattern building, 25 x 200 feet. Electric cranes and an industrial railway serve the plant. An elevated track provides for dumping coal direct to pockets without handling.

Equipment will consist of four hydraulic forging presses, 30 steam hammers, 1,000 to 10,000 pounds, and six board hammers from 500 to 1,000 pounds. The plant is expected to be in operation by July 1, 1914.

Niles furnace of the Carnegie Steel Co., Niles, O., which has been operating about 18 months, has been blown out. F. B. Quigley, superintendent, is to return to the Ohio works at Youngstown as assistant to J. C. Barrett, superintendent of the furnace department.

Extreme Quiet Continues in New York

Very Little Buying of Pig Iron—Steel Bars Not So Weak as in Other Centers—Scrap Still Declines

BY C. J. STARK.

Office of THE IRON TRADE REVIEW,
503-4 West St. Bldg.,
New York, Nov. 4.

Iron Ore.—It is estimated that the total importations of merchant Cuban ore this year will reach 175,000 to 200,000 tons. This is about the normal movement in recent years. The iron ore market in the east remains dead.

Pig Iron.—Another week of extremely quiet trading in this district has shown no change in the conservative temper of buyers towards covering ahead. Inquiry and sales in the metropolitan district have remained practically negligible. The largest sale reported was 1,000 tons of special iron for export upon which full domestic prices were obtained. A few small inquiries for Jersey delivery are out and an up-state buyer is still figuring upon 500 tons of malleable. The market is so quiet that prices remain poorly defined, but $15.50 to $16, tidewater, for No. 2X probably covers the situation. Buffalo iron still holds to $14, furnace. Most of the week's activity has been in upper New England districts. A Massachusetts textile machinery maker, who has been quietly figuring, is reported to have closed for 1,000 tons of foundry iron. An inquiry for another textile machinery interest at Hopedale, Mass., is inactive. A manufacturer of blowing equipment in Boston territory wants 1,000 tons of forward foundry. A Rhode Island malleable interest asking 1,000 tons of malleable is reported to have closed partially at $16.70, delivered, or $14.25, Buffalo. Another matter involving several thousand tons for New England shipment still is pending. The Crucible Steel Co. asks 500 tons of low phosphorus iron for delivery in this district.

Ferro-Alloys.—Some additional sales of English ferro-manganese for early shipment are reported at $50, seaboard. These usually have been of the 100-ton or less class, as there is little buying forward. German ferro-manganese continues to be quoted at $49 to $49.50, seaboard. Some spiegeleisen remains under negotiation. These orders probably will go to domestic makers, as the foreign product is not competitive at this time, at quoted price of about $27, seaboard.

Plates.—Prices of lower than 1.30c, Pittsburgh, have been reported from different eastern territories, but no instances of this kind have come to light in this district. The usual market here is 1.46c to 1.51c. Tonnage in this territory is running small. The lower prices on car materials continues to produce a greater stir in the equipment market, but the prospect of delayed action upon the railroads' petition for a freight increase is expected to have some effect in holding off some of these purchases at least temporarily. Confirmed car orders placed with builders in October reached about 7,000, which represents the best month since April.

Structural Material.—On the larger orders, 1.30c, Pittsburgh, or 1.46c, New York, is being rather freely done, but there is still considerable miscellaneous business being put upon the books at 1.35c, Pittsburgh. The disposition of buyers to hold off in placing steel contracts for buildings remains marked and undoubtedly arises from an expectation of lower prices. In this city, structural tonnage apart from that for the subway and elevated extensions continues light.

Cast Iron Pipe.—The past week has been a quiet one in cast iron pipe. The season when the municipalities bring out few new requirements is at hand and new business from private sources is only fair. Prices continue irregular, depending upon the attractiveness of the order. Bids have been taken upon a small tonnage of 12-inch for the State Hospital for the Insane, at Norristown, Pa.

Iron and Steel Bars.—Some consumers have been reporting their ability to buy steel bars at 1.35c, Pittsburgh, but it is significant that no orders at this price are reported, and it is not believed that the market has changed from the 1.40c base. There is no sizable business, however, to test the market. Specifications are sluggish. The bar iron market has a weak tone, but with lower scrap prices makers are able to obtain more margin of profit on close quotations. The wide spread of about 1.32c to 1.45c, New York, still covers all grades and conditions.

Coke.—Further sales of standard Connellsville furnace coke for prompt delivery have been closed in this district at $1.90, ovens. One large buyer took 1,500 to 2,000 tons at this price. Producing interests which have been holding off for higher prices are now willing to sell around $2, ovens, for prompt fuel.

Old Material.—Each week still adds its further weakness to scrap materials and the market is in a rather discouraging state for both producers and dealers. Buying is slow, as requirements are well covered and consumers are able to get material at their own prices. Heavy melting steel is still dropping, small sales having been done at $10.50, delivered eastern Pennsylvania.

Wrought scrap is heavy. Cast still shows the best demand.

IMMEDIATE SHIPMENT

Demanded on Southern Iron—Prices Apparently Firm in Alabama.

BY W. B. NEAL

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., Nov. 4.

Pig Iron.—The pig iron market for the week just past, was quiet, inquiries were not so numerous yet fair, and demands for small requirements for immediate shipment were insistent. The largest single transaction was for 2,500 tons of No. 3 foundry and was entered for first quarter delivery at $11.25 per ton, Birmingham. The differential of No. 2 foundry and No. 3 foundry, being 50 cents per ton, shows that the quotation of $11.75 per ton for No. 2 foundry f. o. b. Birmingham, for first quarter of 1914, is being maintained and the sale of one 800-ton lot and also one 400-ton lot for last quarter 1913 at $11.50 per ton for No. 2 foundry, Birmingham, also shows that former quotations are being maintained. The aggregate tonnage entered during the present week amounts to 5,600 tons. Some 1,300 tons of this was in small lots, from carload lots up to 250-ton lots. Of this 1,300 tons, one furnace sold 500 tons, all of which was entered in car lots. Some 600 tons of special analysis iron in car lots and 150-ton lots was also entered at prices taking the usual premium for this special grade. The furnace interests are all very much engaged in forwarding tonnage previously booked and are not very much worried as to future tonnage. A large shipment of iron, said to amount to 900 tons, went forward from Bessemer, Ala., to Boise City, Idaho, this past week.

Cast Iron Pipe.—Continued operation, without any great curtailment of output, is the status of the various plants of the district. There seems to be some better feeling along certain lines of production, but as a

whole, the output is somewhat below normal, and much of the make is being stored for future requirements. Quite a large shipment of large-size pipe went forward from Bessemer, Ala., to the Isthmus of Panama on the first of this month.

Old Material.—The market in old materials is very quiet, and exceptionally so in steel scrap. Heavy machinery scrap is in fine demand and finds ready sale for all that can be procured. Melters are using much of this class of scrap instead of the lower grades of pig iron. Transactions are almost entirely confined to contract engagements, some 100 tons having been delivered along this line during the week.

BRITISH PIG IRON

Shows No Improvement—Better Feeling in Finished Lines.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Oct. 25.

Pig Iron.—The position of pig iron shows no improvement, although prices have been steadier during the week. The latest quotation from Middlesbrough is 51s 7d ($12.62) for cash buyers, with 51s 8d ($12.64) one month and 52s 3d ($12.78) three months. Forward business there is being entirely neglected. Makers are greatly disappointed that the extensive stoppage of furnaces has not had a better effect on business. A peculiar feature is that Middlesbrough stocks continue to decrease, the amount in store now being 164,000 tons. The only hopeful feature is that, in regard to prices, pig iron is the firmest thing in the market, for the sole reason that the profit line has been passed, and smelters either have to sell at ruinous prices or close down. It is said that some more of them have already decided on the latter alternative.

The foundries continue the best users of iron, and Midland smelters, accordingly, are turning their attention more largely to the production of foundry material. Apparently, consumers have set their minds on doing business at 50s ($12.24) and will try their hardest to force prices down to that figure before they begin buying. So far nothing is known of American orders for pig iron, but Japan is taking very good deliveries. There has been some little weakening in hematite brands, which can now be bought on the east coast for 65s ($15.90).

Finished Iron and Steel.—The finished department continues to show much greater weakness than that of raw material. On Wednesday the Scottish Steelmakers' Association further reduced their steel 10s ($2.44) per ton in respect of boiler plates, ship plates, angles and bars.

Continental competition is exceedingly keen both from Belgium and Germany. Continental bars are selling at £4 16s ($23.50) net, f. o. b. Antwerp, while the Scotch price is £6 10s ($31.86) on the Clyde. In the Birmingham district 4-inch billets were on offer at £4 10s ($22.04), but the Germans declined offers of considerable orders at £4 5s ($20.76). Another significant feature about the foreign business is that leading German houses are strictly prohibiting their agents from entering into any pledges for delivery in the New Year. This is interpreted to mean that a marked improvement is expected in Germany early in 1914. This would be of great importance to this country. At the present time German steel bars are being offered for delivery in this country at £5 10s ($26.92) and iron bars at £5 17s 6d ($28.76). This, however, is No. 2 iron of rather poor quality.

On the whole, the feeling in the steel trade is rather more optimistic than it was.

The galvanized sheet trade shows great weakness, although a large output is being maintained. It was possible to buy galvanized sheets at Birmingham on Thursday at £10 12s 6d ($52.08), or about 5s ($1.22) below recent prices. There are no prospects of improvement in this department. Some remarkably low offers are being made by makers for export contracts. Generally speaking, the mills are keeping up their production, and making very good time.

The tin plate trade continues in a very unsatisfactory condition, and prices even now are falling.

INSISTENT DEMAND

For Prompt Delivery is Strongest Feature of St. Louis Market.

BY E. C. ERWIN

Office of THE IRON TRADE REVIEW,
St. Louis, Nov. 4.

Pig Iron.—Perhaps the best indication of healthy conditions in the St. Louis market is frequent demand for shipments of pig iron, although there is practically no new inquiry, except for small tonnages. One firm received a request from a customer last week to ship all November and December purchases at once, but was able to comply only with those bought for November. The inquiry for 2,000 tons of malleable, reported last week, was closed Friday, and by some it is believed was increased to 4,000 tons. Southern No. 2 is generally quoted at $11 for this year, and $11.50 for first quarter. Northern iron is unchanged at $15, Chicago, and $14, Ironton.

Coke.—No new business is in sight, and prices are unchanged from last week.

Old Material.—Very little scrap buying is going on, and the railroads seem to be withholding tonnages because of the dullness of the market. This is taken to mean that if the railroads continue to refuse to sell, stocks will become so depleted when the mills begin to buy that prices will advance rapidly. Lists out today from the Mobile & Ohio, 400 tons; Kansas City Southern, 150 tons; Wabash, 500 tons, and Missouri Pacific, 700 tons.

LOWER LEVELS

Touched by Steel-Making Irons During Dull Month.

Grades of steel-making iron have renewed their march toward lower levels, according to the monthly report for October, issued Saturday by W. P. Snyder & Co. Sales of Bessemer and basic, involving 1,000 tons or more, averaged $15.703 and $13.709, respectively, at valley furnace. The Bessemer average is $0.047 and the basic average is $0.4285 below levels established in September. The former grade has declined five times and the latter has declined eight times this year, monthly reports indicate.

In October, 1912, Bessemer and basic averaged $17 and $16.184, respectively. These figures are $1.297 and $2.475, respectively, above those established last month. Sales of Bessemer last month involved 16,000 tons; basic sales involved 6,000 tons. Sales in September are somewhat lighter. Since the October report was completed, basic has sold at approximately 65 cents less than the average.

Averages of steel-making grades since January, 1912, are as follows:

	Bessemer		Basic	
	1913.	1912.	1913.	1912.
Jan.	$17.25	$14.078	$16.45	$12.372
Feb.	17.25	14.00	16.317	12.25
Mar.	17.25	14.0536	16.059	12.76
Apr.	17.008	14.25	15.714	12.981
May	16.78	14.2345	14.899	13.00
June	16.2375	14.25	14.50	13.209
Av. for 1st half	16.9625	14.443	15.654	12.762
July	15.4085	14.25	14.227	13.48
Aug.	15.657	14.534	14.045	14.00
Sept.	15.75	15.962	14.1375	15.134
Oct.	15.703	17.00	13.709	16.184
Nov.	.....	17.172	.....	16.192
Dec.	.....	17.2962	.....	16.4486
Average for year	.....	15.090	.....	14.001

Six days labor notices have been posted at the Gary mills of the Illinois Steel Co., that hereafter no employe will be allowed to work more than six days a week, extra crews being organized to make up for the deficiency,

WILL DIVIDE SURPLUS

Unique Profit-Sharing Plan of Youngstown Sheet & Tube Co.

The Youngstown Sheet & Tube Co., Youngstown, O., has issued a statement with reference to the recent distribution of stock to its employes. The distribution is in the nature of a reward for past services and is unique in the fact that a stock distribution has been made which goes back into the past and divides with the employes the surplus earned in former years. The statement of the company is in part as follows:

"At the last annual meeting of the stockholders of the company, 5,000 shares of the common stock, having a par value of a half million dollars, was set aside to be sold to employes of the company, in such amounts and on such terms as the board of directors might approve.

"The board of directors have decided upon a plan for disposing of this stock. Owing to the limited amount of stock available, it is impossible to sell it to all employes who might wish to purchase it. The company, however, has had in effect for some years past, a profit-sharing plan, in which all of its employes participate, and this profit-sharing distribution, we hope, will be continued in the future, so that employes not included in the stock sale will continue to participate in the earnings of the company, as in the past.

"The stock will be sold to employes of the company holding the more important positions of responsibility. In general, this includes in the executive, sales and accounting departments, the heads of departments and their chief assistants, and in the operating department, superintendents of departments and their chief assistants, making a total of about 125 employes. Each of these employes, under the plan of the directors, will be entitled to subscribe to an amount of stock which, at par, is approximately equivalent to his yearly salary. In deciding upon the price at which the stock should be sold, the directors were desirous of recognizing the loyalty and efficiency on the part of the company's employes which had been instrumental in earning the present accumulated surplus, a large factor in determining the present market value of the stock, which—were any considerable amount of stock involved—would be about $175 per share. It, therefore, seemed necessary to make such recognition commensurate with the length of service of the employe, since the longer a man had been in the service of the company, the greater part he would have had in the earning of the surplus. Following this reasoning, it was decided to charge the man who entered the company's employ in 1905 or prior to that year, par or $100 per share for their stock, and to add $5 per share to the price for each successive year, making the price to men who entered the company's employ in 1913, $140 a share, or the maximum price charged. This procedure seemed as equitable as any which could be devised, in that the men paying the highest price still secured a very substantial profit, namely, about $35 per share, and the men entering the company's employ in any one year were all treated alike, there being no favoritism."

Municipal Shop Awarded

Cramp & Co. have received the general contract to erect a municipal repair shop for the city of Philadelphia, which is to be built under the direction of the department of safety. The building will be three stories and 116 x 128 feet, and will cost about $100,000, including equipment.

METAL MARKETS

New York

Nov. 3.

Copper.—Demand for refined copper in this country continues very dull and consumers still are unwilling to buy electrolytic at the price at which it is held. The market for electrolytic is perceptibly weaker than it was a week ago, despite the fact that the leading producers and selling agencies continue to hold firmly to their old asking price of 16.87½c, delivered, 30 days. A few of the smaller producers are offering to sell electrolytic at from 16.62½ to 16.70c, 30 days, delivered, and it is reported that some business has been done at these prices. Second hands are freely offering small lots of electrolytic today at 16.20 to 16.30c, cash, for delivery to nearby points. Toward the end of last week they were selling it at about 16.40c, or from 10 to 20 points higher than today's price. The entire situation is exceptional in view of the strong statistical position of copper. For the very best brand of prime lake, which is now the only brand obtainable, 17.25c, cash, is asked and there have been some sales at this figure. Other lake producers and their selling agents quote a nominal price of 17c, cash, but do not have any for general sale; these interests are exerting themselves to help out their old customers. Second hands quote lake at 16.62½ to 16.75c, cash, for delivery to nearby points, but this metal is not of prime quality. Demand for casting is very dull. It is quoted by producers at 16.60c, delivered, 30 days. For casting made from virgin material, 16.85c, 30 days, is asked. Second hands are offering casting at 16 to 16.12½c, cash.

The closing price of spot standard copper on the London exchange today was £3 10s lower than last Monday. Today's close in London was £71 10s for spot and £70 7s 6d for three months. Sales on the London exchange today totaled 700 tons of spot and 2,900 tons of futures standard. Exports during October amounted to 29,007 tons. Exports during the first ten months of the year amount to the satisfactory total of 307,244 tons. Imports during October were as follows: Ores, 11,730 tons; matte 3,285 tons, and copper, 8,035 tons.

Tin. — A fair business in this metal was transacted today, and the demand was even better during the last two days of last week. The market is rather weak, however. Today's London close was £181 15s for spot and £183 for three months, compared with £184 for spot and £184 10s for three months a week ago. During the week 590 tons of spot and 2,570 tons of futures were sold on the London exchange. Deliveries into consumption during October were better than was expected, amounting to 3,700 tons, as compared with 3,600 tons in August and 3,100 tons in September. Total deliveries for the first ten months of this year show a decrease of 3,150 tons as compared with deliveries for the first ten months of last year. Some sellers of tin believe that these figures do not denote any decrease in the rate of consumption but represent no more than the shrinkage of stocks in consumers' hands. Arrivals during October, at Atlantic ports, amounted to 3,515 tons. Stocks in this country on Nov. 1 amounted to 2,357 tons, and 2,435 tons are now afloat to this country.

Lead.—There has been a good general demand for lead during the past few days and the market is very strong. Leading interest and outsiders both charge 4.35c, for carload lots, New York delivery, and this price cannot be shaded. One sale, St. Louis delivery, is reported at 4.22½c, which is equivalent to 4.37½c, New York.

Spelter.—Demand for spelter is light. The market is strong and the slightest inquiry appears to result in a strengthening of price. There is a smaller demand from the galvanizing industry and there is less call for brass mill spelter. Prime western brands, in carload lots, may be had in New York at 5.30c to 5.40c.

Antimony.—There was a flurry in this market a few days ago and an attempt was made to boom prices. This has fizzled out and the market is quite without life. We quote, duty paid: Cookson's, 7.65 to 7.75c; Hallett's, 7.25 to 7.37½c; other brands, 6.62½c.

Chicago

Nov. 3.

New Metals. — Sales of copper are improving and the market has a better tone. Inquiries are more numerous. Whether or not this is a temporary spurt remains to be seen. Spelter is a little firmer and lead is also showing some strength.

We quote dealers' selling prices f. o. b. Chicago as follows:

Lake copper, carload lots, 17c; casting, 16¾c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.30c; lead, desilverized, 4.25c; sheet zinc, $7.50, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 41c; Cookson's antimony, 8½c; other grades, 7½c.

Old Metals. — The Chicago old metal market was quick to reflect the better sentiment in the primary trade. Actual sales, however, show very little change. There is an improved demand for aluminum scrap.

We quote dealers' selling prices f. o. b. Chicago as follows:

Copper wire, crucible shapes, 14½c; copper bottoms, 12¾c; heavy red brass, 13¼c; heavy yellow brass, 8½c; No. 1 red brass borings, 11½c; No. 1 yellow brass borings, 8c; brass clippings; 9¾c; lead pipe, 4¼c; zinc scrap, 4c; tea lead, 4c; No. 1 aluminum, 16½c; No. 1 pewter, 28c; block tin pipe, 36½c; tin foil, 32c; linotype dross, 3c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3c.

Shows Decline of 14 in Number of Active Stacks

October Report of Pig Iron Output Emphasizes Decreasing Activities—Total Production Gains But Average is Less

A net loss of 14 in active blast furnaces is shown in comparing the last days of October and September, making the total of stacks in blast the smallest since June, 1912. The production of coke and anthracite pig iron showed a small gain last month over September, due to the longer month, but the decline in furnace activities is reflected by the drop in average daily output.

The pig iron production last month was 2,539,919 tons, compared with 2,494,098 tons in September, a gain of 45,821 tons. The output in October of last year was 2,683,645 tons.

In average daily output, the figures for October and September of this year are 81,933 and 83,137 tons, respectively, a decline last month of 1,204 tons. The average production in October, 1912, was 86,569 tons.

The loss in average production was

AVERAGE DAILY PRODUCTION.

	1913.	1912.	1911.
January	89,929	66,220	56,989
February	92,095	72,372	63,617
March	89,123	77,791	69 863
April	91,812	79,254	68,163
May	90,865	80,753	60,367
June	87,229	81,125	59,109
July	82,525	77 502	57,294
August	81,839	80,650	61,995
September	83,137	81,482	65,797
October	81,933	86,569	67,486
November	.....	87,985	66,637
December	.....	89,590	65,558

due to the decline in the production of non-merchant iron, as the merchant furnaces made a small gain in both total and average output in October.

The steel works or non-merchant furnaces produced 1,853,410 tons in October and 1,828,882 tons in September, a gain of 24,528 tons. In average production the figures for the two months are 59,787 and 60,963 tons

MONTHLY PRODUCTION.

	1913.	1912.	1911.
January	2,787,800	2,052,806	1,766,658
February	2.578,670	2,098,796	1,781,285
March	2,762,823	2,411,529	2,165,764
April	2 754,353	2,377,621	2,044,904
May	2,816,825	2,503,341	1,871,388
June	2,616,883	2,433,737	1,773,282
July	2 558,275	2,402,567	1,776,108
August	2,537,018	2,500,163	1,921,832
September	2,494,098	2,444,454	1,973,918
October	2,539,919	2,683.645	2,092,061
November	.....	2,639,562	1,999,100
December	.....	2,777,292	2,032,301
Totals	26,446,664	29,325,513	23,198,601

respectively, a loss last month of 1,176 tons.

The production of merchant iron in October was 664,036 tons against 638,134 tons in September, a gain of 25,902 tons. The average output in October was 21,421 tons compared with 21,271 tons in September, a gain of 150 tons.

The loss in active stacks is also due to the slackening activities of the non-merchant furnaces, 17 being blown out and two relighted, a net loss of 15. Six merchant furnaces were blown in and five put out, a net gain of one. In all, eight stacks were blown in and 22 blown out.

The number of active stacks on Oct. 31 was 244, compared with 258 on Sept. 30 and 280 on Oct. 31, 1912.

The production of ferro in October was 16,314 tons, compared with 15,463 tons in September, a gain of 851 tons. The October output of spiegel was 6,159 tons against 11,619 tons in September, a loss of 5,460 tons.

OCTOBER PIG IRON

States.	No. of stacks.	No. in blast last day of month. Oct.	Sept.	Total tonnage made. Merchant.	Non-Merchant.	——Totals—— Oct.	Sept.
Pennsylvania	159	100	105	163,071	922,383	1,085,454	1,017 506
Ohio	73	57	60	201,467	432,255	633,722	617.824
Alabama	45	21	21	99,101	62,259	161,360	157,249
Virginia	22	8	5	22,622	.....	22,622	16 985
New York	27	15	18	78,563	81,457	160,020	180,527
New Jersey	7	2	2	11,236	.....	11,236	10,760
Illinois	26	16	19	27,345	173,091	200,436	222,221
Colorado	6	1	2				
Indiana	10	8	10				
Maryland	4	3	3				
Wisconsin	6	2	2	12,640	167,551	180,191	182,642
Kentucky	7	2	2				
West Virginia	4	2	2				
Tennessee	18	3	3				
Washington	1	0	0	22,398	14,414	36,812	36,222
Georgia	2	0	0				
Texas	3	0	0				
Minnesota	1	1	1				
Michigan	3	3	3				
Missouri	1	0	0	25,593	.....	25,593	25,080
Spiegel—All states...						6,159	11,619
Ferro—All states....						16.314	15,463
Totals	425	244	258	664,036	1,853,410	2,539,919	2,494,098

Will Not Put Stacks on Foundry

New York, Nov. 5. (By wire.)—Reports from Cincinnati and other districts that the Tennessee Coal, Iron & Railroad Co. is planning to put on foundry several of its furnaces now making basic and wage an aggressive campaign for business is officially stated to be without foundation. The company is offering foundry iron no more freely than usual.

Men Who Built Plant.—The construction and operating force of the Pittsburgh Crucible Steel Co.'s new plant at Midland, described in this issue, consists of men who have made good records in several of the leading steel companies. It includes W. H. Blatzell, chief engineer; W. G. O'Malley, general master mechanic; F. D. Egan, electrical engineer; N. C. Harrison, steam and hydraulic engineer; T. J. Driscoll, chief draftsman; W. J. Harris, superintendent of the open-hearth furnaces; Ralph Harris, superintendent of the blooming mill, and E. B. Wilkinson, superintendent of the blast furnace.

Blast furnace No. 4 of the Cambria Steel Co., Johnstown, Pa., has been blown in after being rebuilt. The furnace formerly had a capacity of 300 tons and this has been increased to about 450 tons. The stack was out of blast 77 days and actual rebuilding consumed 58 days. The stack was blown in first in 1883 and rebuilt in 1898.

Lawrence furnace of the Marting Iron & Steel Co., Ironton, O., has resumed operation after being out for several weeks on account of lack of water. The plant of the Superior Portland Cement Co., Ironton, also has resumed operations since water has become more plentiful.

The Keystone Furnace Construction Co., Pittsburgh, has reduced capital from $50,000 to $5,000.

WEIGHING PROBLEM

Being Considered in Connection with Removal of Duty.

New York, Nov. 4.—Through the railroads acting as the intermediary, it is believed in large part will come the solution of the problem of the determination and acceptance of weights of shipments by buyers and sellers where material is being imported free of duty. This question has aroused no small attention among prospective importers of material, particularly of pig iron, along the Atlantic coast. In whatever way the matter is finally adjusted, it is believed by some in the trade that in certain cases at least, this detail of such transactions will add considerable to the incidental costs of importation which in the main will fall upon the middleman.

Formerly when pig iron, ferro-manganese, iron ore and other bulk materials were under duty, a certificate from the custom house officials of the weights taken by the railroads in loading shipments from a cargo usually was acceptable to all parties concerned. Now, as there will be no custom house inspection of incoming cargoes of material free of duty, it is being arranged by some leading importers that the railroads themselves at the ports of Philadelphia, Baltimore and New Orleans give a certificate of the weights of material received by them for shipment to various consumers. Some such arrangement is necessary particularly where cargoes are split up among different consumers, and further because neither the middleman nor the consumer, when dealing with a foreign maker direct, will accept the weights taken at the furnaces or mines abroad. This plan of settlement by railroad weights at the port of entry has been followed for some years by the Carnegie Steel Co. in importing manganese ore which has been upon the free list.

It is expected that in many cases, however, this railroad certificate of weights will not be acceptable to the consumer when dealing with a middleman. In instances, this method of settlement will probably not be satisfactory likewise to the foreign seller. In either of these events, the services of a public weighmaster either at the point of original shipment abroad or at the port of entry or both, as may mutually be agreed upon, will have to be provided. Some importers have already made arrangements with public weighmasters at different ports to do such weighing as is required and the rate usually has been fixed at about 5 cents a ton. This matter of obtaining weights at a nominal cost promises to be more difficult at some ports than others, because many weighmasters have been forced out of business in late years by a lack of demand for their services.

The question of reaching a satisfactory method of computing weights on free materials is especially of importance where the transfer of shipments from the steamer at the receiving port is not done to railroad cars, but to barges, as will probably be the plan of trans-shipment followed if foreign pig iron is brought in for cast iron pipe makers along the Delaware river. The plan usually followed in the past under the supervision of the customs officials has been to weigh the iron in slings as it is swung to the barge from the steamer. This is a tedious and expensive method. It may be found best in such cases to unload the iron first to railroad cars, where it should be weighed and then transferred to the barge. This operation, it is figured, may add as much as 25 cents a ton as a weighing charge to the incidental expenses of importation. This charge in the main would probably fall upon the importer.

AT LOWER PRICES

Foreign Steel Products Are Being Offered on Pacific Coast.

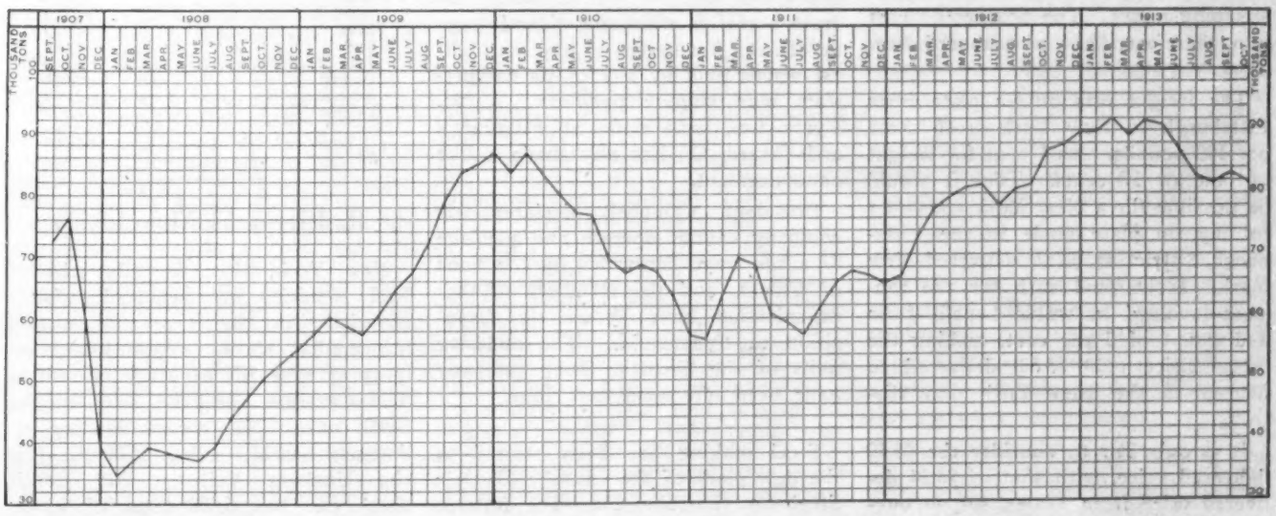
Los Angeles, Nov. 4.—As was expected, foreign makers are now offering finished steel materials at consuming points along the Pacific coast at considerably below the prices quoted by the home producers.

Buyers in this city have been quoted German and Belgian plates at 1.81c, Los Angeles; joists or shapes at 1.76c, and steel bars at 1.61c. At the most favorable freight obtainable from Pittsburgh to the Pacific coast, which is a rail and water rate of 66 cents by way of New York, these prices figure back to equivalents of 1.15c, Pittsburgh, on plates, 1.10c on shapes, and 0.95c on steel bars per pound. The all-rail rate of 80 cents from Pittsburgh to the Pacific coast makes the base price equivalents at Pittsburgh much lower.

It will be recalled that recently the United States Steel Products Co. announced a reduction on steel bars for Pacific coast delivery to 1.75c at San Francisco or other points.

Strike at Girard

A strike has been called at the South Side mill, Pittsburgh, and the Girard mill, Girard, O., of the A. M. Byers Co., Pittsburgh, by the United Sons of Vulcan. Both mills, formerly controlled by the Sons of Vulcan, have adopted open shop policies, and it is probable that several other mills in the Pittsburgh district, idle since July 1, when the Sons of Vulcan asked a $7 rate for puddling, will resume operations shortly, notwithstanding previous labor agreements.



AVERAGE DAILY PRODUCTION OF COKE AND ANTHRACITE PIG IRON

SEE NO DANGER

Domestic Tin Plate Makers Unafraid of Foreigners.

Independent makers of tin plate, following the lead taken Monday by the American Sheet & Tin Plate Co., have opened their books for future delivery, asking $3.40 for base size boxes. Prices prevailing today are as follows:

Coke tins	
14 x 20 I. C.	$3.55
14 x 20 100 pounds	3.40
14 x 20 95 pounds	3.35
14 x 20 90 pounds	3.30
Ternes	
Eight pound coated	
20 x 28 I. C.	$6.90
20 x 28 200 pounds	6.60

Although tin plate is selling at $4 a ton less than the price named a year ago, the actual decline is $2 a ton, for the market has been listed at $3.50, as a minimum for base size boxes, since Sept. 16.

Will the present price of tin plate prevent foreign makers from figuring in this market? is a question naturally considered at this time. Unless the market abroad declines considerably, it is practically certain that domestic consumers in this part of the country will not attempt to buy material abroad, unless they are unable to obtain desired deliveries in this country. Leading tin plate makers do not fear much of an invasion in the far west.

Base size boxes of tin plate are now quoted at about $2.91 at Swansea, Wales. To this price an American consumer wishing to buy foreign material for shipment to the eastern seaboard of this country—say, New York, for instance—would have to pay a duty of 44 cents; it would cost him 11 cents to ship, and to this he would have to add about 8 cents for brokerage and insurance fees and for stripping boxes. The box would cost him, therefore, $3.54, at seaboard New York.

The freight rate on tin plate from Pittsburgh to New York is 16 cents per 100 pounds, plus 1 cent for weight of box, or 17 cents. Thus it would be possible for a New York consumer to buy tin plate made in the Pittsburgh district at $3.57, delivered New York. If he paid cash for the tonnage involved he would benefit from a discount of 2 per cent, making the actual price paid $3.50, delivered to factory in the New York City district.

It is only fair to consider the $3.50 delivered price, with that of $3.54 delivered price from Wales, for, in buying in foreign markets it is necessary to make payment when the material is delivered alongside vessel.

Considering the many advantages of patronizing domestic manufacturers, tin plate manufacturers in this district see no probability of an invasion along the eastern seaboard. The price prevailing abroad today is about 9 cents below the normal minimum level.

Last year the price of future tin plate was decided the early part of September; it was first named by an independent manufacturer. In 1909 the price was set at $3.50 on September 28, but was subsequently advanced to $3.60 on November 12. On February 3, 1911, another advance of $2 a ton was recorded, and that figure held until Oct. 16, when a $3.40 quotation went into effect. The next change occurred May 15, 1912, when an advance of $2 a ton was made, and the season's price for 1913 was announced Sept. 10, 1912, at $3.60.

Tin plate prices, for base size box, have been changed as follows the last few years:

Sep. 28, 1909	$3.50
Dec. 12, 1909	3.60
Feb. 3, 1911	3.70
Oct. 16, 1911	3.40
May 15, 1912	3.50
Sep. 12, 1912	3.60
Nov. 3, 1913	3.40

DECLARES OPEN SHOP

Youngstown Sheet & Tube Company Breaks With Sons of Vulcan.

Pres. James A. Campbell, of the Youngstown Sheet & Tube Co., Youngstown, O., has issued a statement to the puddler employes of the company, members of the United Sons of Vulcan, in which he declares the company's mill will be operated open shop after Nov. 15. He adds that the company does not propose to run non-union, but that it proposes to operate hereafter without a signed wage agreement, but agrees to pay the highest wages paid by any of its competitors who employ puddlers. A. M. Byers Co., with mills at Pittsburgh and Girard, O., has also made a like announcement.

President Campbell declares his company cannot operate and pay the $7 a ton wage demanded by the Sons of Vulcan, and the members of that organization have shown no disposition to compromise. The puddling mills of the Sheet & Tube company have been idle since last June.

Steel making has been started at the new plant of the Latrobe Electric Steel Co., Latrobe, Pa. The furnace has a capacity of 20 tons a day.

LARGEST TOTAL

Of Car Orders for Any Month Since May—More Activity.

Confirmed orders for cars placed with builders in October show the largest total of any month since May.

According to carefully compiled records, verified at original sources, the aggregate orders taken by builders and reported during the month past reached about 7,500 cars, compared with about 2,000 in September and about the equal number in August. Some estimates of the extent of car buying in October place the total at a considerably higher figure, but it develops that some of the contracts reported in the month are repetitions of awards made some time prior and revived at this time for various reasons. The 7,500 cars ascribed to the month of October do not include those cars for which the railroads made arrangements to build in their own shops, of which there were several thousand, including 1,000 for the Norfolk & Western, nor do they embrace underframes placed.

The total number of cars placed with builders in the calendar year up to Nov. 1 is now about 95,500. A month ago, when the car market was in an extremely dull condition, builders were in doubt whether the total awards for 1913 would reach 100,000 cars. It now seems pretty well assured that the total will exceed the century mark, since conditions in the equipment field are more active and inquiries which promise to be closed soon, are more numerous.

The number of cars placed each month during the present year to date, according to careful records, shows the following:

Month.	Total.
January	30,000
February	22,000
March	5 000
April	13,500
May	10,000
June	2,500
July	1,000
August	2,000
September	2,000
October	7,500
Total to Nov. 1	95,500

Rail Inquiries More Lively

New York, Nov. 5. (By wire.)—Rail inquiries are reported brisker, especially in the west and further information shows extraordinary inquiry by railroads for track fastenings. The Carnegie Steel Co. will furnish 5,000 tons of the recent Reading order, and has also taken 1,000 tons for the Hocking Valley. The Lorain Steel Co. has 6,000 tons of girder rails for Buenos Aires tramways.

TRACK MATERIAL

In Active Demand—Fair Number of Cars Ordered.

An interesting development in railroad buying is the heavy inquiry for track material that has appeared from different systems, east and west. One very large tonnage of angle bars is under negotiation and aggregate inquiries for more than 17,000 tons of tie plates are before makers. Numerically, this tonnage of tie plates calls for between 3,500,000 and 4,000,000 plates. Most of this track material is wanted for repairs and upkeep and only a small fraction of it is in connection with new rail purchases. The rail market continues more active. The Reading has bought 24,000 tons, and there have been smaller sales. The Louisville & Nashville is inquiring for 45,000 tons. A report has been current in Philadelphia that the Pennsylvania railroad has issued an inquiry for 100,000 tons of rails, but this is officially denied and no assurance is given when this order will be finally distributed. The Pennsylvania railroad, as a rule, does not issue an inquiry, but merely distributes its orders when ready. The greater stir in the car market proceeds. Confirmed awards to builders in October were the heaviest of any month since May 1. The Baltimore & Ohio railroad has awarded 2,600 tons of bridge work. Eight sections of New York's subway and elevated work, calling for 40,000 to 50,000 tons, are now up for bids. As low as 1.55c, Pittsburgh, is reported on standard spikes.

In the west, the feeling persists that a fairly liberal amount of railroad buying may be expected in the near future, but an actual survey of conditions shows that there has been a recession of the very moderate wave of car buying experienced last month.

RAIL SALES AND INQUIRIES.

The Baltimore & Ohio railroad has placed 1,000 tons of 120-pound sections with the Pennsylvania Steel Co.

The Louisville & Nashville railroad is inquiring for 45,000 tons of rails for next year's delivery.

The St. Louis, Brownsville & Mexico has ordered 3.100 tons of rails from the Tennessee Coal, Iron & Railroad Co.

The Philadelphia & Reading railroad has distributed its rail order for next year, calling for 24,000 tons of which 11,000 tons went to the Pennsylvania Steel Co., about 7,000 tons to the Bethlehem Steel Co., and the balance to the Carnegie Steel Co. and the Lackawanna Steel Co.

The New York & Long Branch railroad has placed 3,000 tons of rails with the Bethlehem Steel Co.

The Louisville & Nashville railroad is inquiring for 45,000 tons of rails for next year's delivery.

A Norwegian railroad is inquiring for 17,000 tons of rails for shipment to Christiana.

CAR AND LOCOMOTIVE BUYING.

The Chicago & Illinois Midland has ordered 250 coal cars from the Haskell & Barker Car Co.

The Chicago, Burlington & Quincy has purchased 100 tank cars from the American Car & Foundry Co.

The Lehigh & New England railroad is inquiring for 500 hopper and 200 gondola cars.

The Mobile & Ohio railroad, which recently placed 500 gondolas, with the Pressed Steel Car Co., as reported, has increased this order to 522 gondolas.

The Chicago, St. Paul, Minneapolis & Omaha railroad has ordered four superheater Pacific passenger locomotives and six superheater Mikado freight locomotives of the American Locomotive Co.

The Mobile & Ohio railroad has ordered 15 locomotives of the Baldwin Locomotive Works.

The Skaneateles Railway Co. has placed one switching locomotive with the American Locomotive Co.

BRIDGE AND STRUCTURAL WORK.

Bridges for the Baltimore & Ohio railroad at Magnolia, W. Va., 2,600 tons, awarded to the American Bridge Co.

Section No. 2 of White Plains elevated railway extension, New York City; bids asked for Nov. 6. Section No. 1 of Jerome avenue subway line; bids asked for Nov. 28. Section 1A of Southern Boulevard subway line; bids asked for Dec. 1. Steel tonnage for these sections not yet definitely estimated. Eight sections of New York subway and elevated extensions now pending.

DOUBT IS EXPRESSED

In Very Limited Placing of Structural Contracts.

Slow awards of structural contracts in eastern districts indicate the uncertainty towards present steel prices among prospective buyers. Little of the considerable accumulation of work upon which original bids have been entered, is being disposed of and inquiries are not coming out very freely. Where work is of attractive size, fabricating prices are being cut sharply.

In the west, there is a further decline in structural activity and fabricating shops are, in many cases, operating at 75 per cent capacity.

CONTRACTS PLACED.

Lock gates for Lake Washington canal, Seattle, Wash., 2,027 tons to the Pennsylvania Bridge Co.

University of Minnesota, educational building, Minneapolis, Minn., 223 tons, to the Minneapolis Steel & Machinery Co.

CONTRACTS PENDING.

Garage for Loose-Wiles Bakery Co., Brooklyn, 400 tons; bids being taken.

Synagogue, Newark, N. J., 400 to 500 tons. Bids being taken. Bethlehem sections largely specified.

Apartment for the Brixton Construction Co., East Seventy-ninth street, New York City, 600 to 800 tons. Bids being taken.

Hotel, Holyoke, Mass. Plans being revised. Originally estimated to required about 1,000 tons..

Warehouse for the Havemeyer estate for the Austin Nichols Co. in Brooklyn. Bids exceed estimates and plans probably will be revised. Originally estimated to require 5,000 tons of steel construction adopted.

Bids are being taken for the new terminal warehouse of the Buffalo, Rochester & Pittsburgh Railroad Co., at Rochester, requiring a large tonnage of reinforcing bars, and some structural shapes.

Plans are being advanced for the new addition to the Onondaga Hotel, Syracuse, N. Y. Esenwein & Johnson, Buffalo, N. Y., taking about 800 tons.

Bids have been received for the Holyoke Hotel, of Holyoke, Mass., same architects, taking about 1,200 tons.

Bids were opened for the new Statler Hotel, Detroit, taking about 2,500 tons.

Coaling station for government at Pearl Harbor, Hawaii, 3 000 tons. Bids entered.

Power plant for Consolidated Gas Co., Baltimore; about 500 tons. Bids asked.

Business building at Washington, D. C.; bids asked on steel about 1,000 tons on first section; another section may be offered later. Iednity of owner not revealed.

Round Tonnage of Bars Sold

New York, Nov. 5. (By wire.)—Engineers for the new buildings of the Massachusetts Institute of Technology have placed 5,000 tons of reinforcing bars for concrete construction with a Pittsburgh mill. The bar market is reported quite active and prices hold pretty well, though 1.40c, Pittsburgh, is being shaded in some districts. In New York City, two unusually large apartments for upper Broadway requiring 4,000 tons of steel have been offered.

Asbestos Protected Metal.—Asbestos protected metal manufactured by the Asbestos Protected Metal Co., Beaver Falls, Pa., in the form of corrugated sheets is being used in large quantities as a permanent, light roofing and siding material for covering tipples, washeries, breakers, pump houses and similar buildings in connection with coal mines. A list of leading interests in the coal producing fields that have made extensive installations recently of asbestos protected metal is as follows: Peabody Coal Co., Nokomis, Ill.; Bessemer Coal & Coke Co., Russellton, Pa.; New River & Pocahontas Coal Co., Havaco, W. Va.; Madeira-Hill Coal Mining Co., Barnesboro, Pa.; Sykesville Coke Co., Sykes, Pa.; Raleigh Coal & Coke Co., West Raleigh, W. Va.; Peoria District Colliery Co., Peoria, Ill.; Lehigh Valley Coal Co., Wilkes Barre, Pa.

Under the bonus system of the Bridgeport Malleable Iron Works, Bridgeport, Conn., $7,000 has been distributed to employes, 98 of whom participated. Of this number 25 received the maximum percentage.

The Bartley Automatic Bolt & Nut Co., Pittsburgh, has increased its capital from $5,000 to $200,000.

IRON AND STEEL PRICES

Pig Iron

PITTSBURGH

(Through This Year.)

Bessemer	$16.15 to 16.40
Basic	14.15 to 14.40
No. 2 foundry	14.65 to 14.90
Malleable	14.90 to 15.15
Gray forge	14.40

(The freight from valley points is 90c.)

CLEVELAND

(Through This Year Delivered in City.)

No. 1 foundry	$15.00
No. 2 foundry	14.50
No. 2 southern	15.35
Bessemer	16.15
Silveries, 8 per cent silicon	18.55

CINCINNATI

(Fourth and First Quarters.)

Southern foundry No. 1	$14.75 to 15.25
Southern foundry No. 2	14.25 to 14.75
Southern foundry No. 3	13.75 to 14.25
Southern foundry No. 4	13.50 to 14.00
Southern gray forge	13.25 to 13.75
Mottled	13.25 to 13.50
Southern No. 1 soft	15.25
Southern No. 2 soft	14.75
Standard southern car wheels	27.25 to 27.75
Southern Ohio No. 2	14.95
Southern Ohio No. 3	14.45
Southern Ohio No. 4	14.20
Silveries, 8 per cent silicon	18.20 to 18.70

(Freight from Ironton, $1.20; from Birmingham, $3.25.)

CHICAGO

(Delivered Chicago, this year, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnace.)

Lake Superior char., No. 1 to 4	$15.75
Northern foundry No. 2	15.00
Southern foundry No. 2	15.85
Jackson Co. silveries, 8 per cent	19.40
South'n silveries, 5 per cent sil.	17.35
Alabama basic	15.85
Malleable	15.00

PHILADELPHIA

(Prompt and third quarter shipment delivered to consumers' plants, in Philadelphia and vicinity, unless otherwise specified.)

Northern No. 1X foundry	$16.00 to 16.25
Northern No. 2X foundry	15.65 to 16.00
Northern No. 2 plain	15.25 to 15.65
Standard forge (Eastern Pa.)	14.75 to 15.00
Virginia No. 2X	15.80 to 16.05
Southern No. 2	15.00 to 15.50
Standard low phos., Phila	21.50 to 22.00
Lebanon low phos., furnace	17.50 to 18.00
Malleable	16.25 to 16.50
Basic (Eastern and Central Pa.)	15.00 to 15.25
Middlesbrough, English No. 3 (on docks)	15.00 to 15.25

NEW YORK

(Prompt and third quarter delivery, prices based at Jersey City and tidewater.)

Northern No. 1X foundry	$16.00 to 16.25
Northern No. 2X foundry	15.50 to 16.00
Northern No. 2 plain	15.25 to 15.50
Virginia No. 2X	16.10 to 16.35
Southern No. 2	15.25 to 15.75
Malleable	15.75 to 16.00
Gray forge	14.75 to 15.00

ST. LOUIS

(Throughout This Year.)

Southern No. 1	$15.75 to 16.25
Southern No. 2	15.25 to 15.75
Southern No. 3	14.75 to 15.25
Southern No. 4	14.25 to 14.75

(Freight, Birmingham to St. Louis, $3.75.)

BIRMINGHAM

(For southern delivery.)

No. 1 foundry	$12.00 to 12.50
No. 2 foundry	11.50 to 12.00
No. 3 foundry	11.25 to 11.75
No. 4 foundry	11.00 to 11.50
Gray forge	11.00 to 11.50
Mottled	10.25
Standard basic	11.50
Off basic	11.00
Charcoal	25.00

BUFFALO

(Through this year, delivered in city.)

No. 1 foundry	$14.25 to 14.50
No. 2X foundry	14.00 to 14.25
No. 2 plain	14.00
No. 3 foundry	13.75 to 14.00
Gray forge	13.75
Malleable	14.25 to 14.75
Basic	14.50 to 14.75
Charcoal	15.50 to 16.50
Charcoal (special brands)	17.00 to 19.50

Ferro Alloys

English and German 80 per cent ferro-manganese, prompt and forward delivery, $49 to $50, seaboard.

Fifty per cent ferro-silicon on contracts, $75, Pittsburgh, or Philadelphia, for carloads; $74 for larger lots and $73 for 600 tons or more. Twelve to 13 per cent, $24. Eleven to 12 per cent, $23. Ten to 11 per cent, $22. Nine to 10 per cent, $21, f. o. b. Globe, Jisco and Ashland furnace. Freight to Pittsburgh, $1.90.

Ferro-carbon titanium 8 cents per pound for carload lots; 10 cents per pound for 2,000-pound lots and over; 12½ cents per pound in lots up to 2,000 pounds.

Freight rates on ferro-manganese, foreign spiegeleisen and electrolytic ferro-silicon from Baltimore to Pittsburgh, $2.16; to Youngstown $2.48; to Cleveland, $2.57; to Detroit and Columbus, $2.99; to Cincinnati, $3.40; to Chicago and Milwaukee, $4.00. Freights from Philadelphia and New York, 10 to 30 cents higher, respectively.

Freight Rates, Finished Material

From Pittsburgh, carloads, per 100 pounds, to:—

New York	16 cents
Philadelphia	15 cents
Boston	18 cents
Buffalo	11 cents
Cleveland	10 cents
Cincinnati	15 cents
Chicago	18 cents
Denver	84½ cents
St. Louis	22½ cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast, shapes and plates	80 cents

Coke

AT THE OVENS.

Connellsville district:	Prompt shipment.	Contract.
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	1.90 to 2.15	2.15 to 2.25
Wise county district:—		
Foundry coke	$2.75 to 3.50	$2.75 to 3.50
Furnace coke	2.15 to 2.25	2.35 to 2.50
Pocahontas district:—		
Foundry coke	$2.85 to 3.00	$2.85 to 3.00
Furnace coke	2.20 to 2.40	2.35 to 2.75
New River district:—		
Foundry coke	$3.25 to 3.50	$3.25 to 3.50
Furnace coke	2.60 to 2.75	2.60 to 2.90

Iron Ore

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, prices are: Old range Bessemer, $4.40; Mesabi Bessemer, $4.15; old range non-Bessemer, $3.60; Mesabi, non-Bessemer, $3.40; al at lower lake ports.

Foreign iron ores, 7½ to 8 cents per unit, f. o. b. cars eastern seaboard. Freight rates from Philadelphia to eastern Pennsylvania furnace points range from 35 to 75 cents per ton.

Semi-Finished Material

PITTSBURGH

Bessemer 4 x 4 billets with 0.25 carbon and less, $21 to $22; open-hearth rolling billets, $21 to $22; Bessemer sheet bars, $22 to $23; open-hearth sheet bars $22 to $23 f. o. b. Pittsburgh and Youngstown. Forging billets, $26, Pittsburgh. Wire rods, $26 to $27; muck bar, $30, Pittsburgh.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity; 4 x 4-inch open-hearth and Bessemer rolling billets at $24.00 to $25.00, and forging billets at from $29.00 to $30.00; muck bar, $28.00 to $30.00.

Standard Shapes

PITTSBURGH

Standard structural shapes, 1.30c to 1.40c For extras see card of Sept. 1, 1909.

CHICAGO

Standard structural shapes, 15 inch and under, 1.48c to 1.53c.

PHILADELPHIA

Standard structural shapes, base sizes, delivered to consumers' plants in Philadelphia and vicinity, 1.40c to 1.50c.

NEW YORK

Standard structural shapes base sizes, delivered in metropolitan district, 1.46c to 1.51c.

Plates

PITTSBURGH

Standard steel plates ¼ inch thick, 6¾ to 100 inches, 1.25c to 1.35c. For extras, see card of Sept. 1, 1909.

CHICAGO

Tank plates, 1¼ inches thick, 6¾ to 100 inches wide, 1.48c to 1.53c.

PHILADELPHIA

Tank plates, base sizes, delivered to consumers' plants in Philadelphia and vicinity, 1.40c to 1.50c.

NEW YORK

Tank plates, base sizes, delivered in the metropolitan district, 1.46c to 1.51c.

Sheets and Tin Plate

PITTSBURGH

No. 28 black	2.00c to 2.05c
No. 28 tin mill black	2.00c to 2.05c
No. 28 galvanized	3.00c to 3.10c
No. 10 blue annealed	1.50c to 1.55c
No. 28 painted corrugated	2.20c to 2.25c
No. 28 galvanized, corrugated	3.10c to 3.15c
Tin plate, 100-pound cokes	3.40c

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity: No. 10 gage annealed sheets at 1.60c to 1.65c.

Pipe and Boiler Tubes

PITTSBURGH

	Black Butt-Weld.	Galv. Butt-Weld.
Steel, ¼ to 3 inches	80	71½
Iron, ¼ to 2½ inches	70	61
	Lap-Weld.	
Steel, 2½ to 6 inches	79	70½

BOILER TUBES

Steel, 3½ to 4½ inches	69	..
Iron, 3½ to 4½ inches	58	..

Other sizes of pipe and tubes take the usual advances as per official cards.

Rails and Track Material

PITTSBURGH

Steel rails, 50-pound and heavier, 1.25c per pound for Bessemer and 1.35c for open-hearth, carload lots; less than 500 tons 1.35c per pound; light rails on base weight of 40 to 45 pounds, 1.25c, schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, base, Pittsburgh; track bolts, 2.25c base, Pittsburgh.

Railroad spikes, 4½, 5 and 5½ and 9-16 inch, 1.60c.

CHICAGO

Light rails, carloads, 25 to 45-pound, 1.25c, base; 16 to 20-pound, 1.30c; 12-pound, 1.35c; 8-pound, 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $21.50 to $22.50; standard section relaying rails, subject to inspection, $23 to $24.

Track fastenings, f. o. b. Joliet:

Angle bars, 1.50c; railroad spikes, 1.65c to 1.70c; smaller size spikes, 1.85c base; track bolts with square nuts, 2.10c to 2.20c.

Bars, Hoops and Bands

PITTSBURGH

Common iron bars, 1.50c, Pittsburgh; Bessemer and open-hearth steel bars, 1.35c to 1.40c; plow and cultivator, 1.35c to 1.40c; channels, angles, zees, tees, under 3 inch, 1.45c to 1.50c, all f. o. b. mill.

Hoops, in carload lots, 1.50c to 1.60c. Pittsburgh; in less than carload lots, 1.55c to 1.65c; bands, 13.50c to 14.00c base, with net extras as per standard steel.

Cold rolled and ground shafting, 62 to 63 per cent off in carloads and 57 to 58 per cent in less than carloads delivered in base territory.

CHICAGO

Bar iron, 1.17½c to 1.25c, hard steel bars rerolled, 1.45c; soft steel bars, bands and small shapes, 1.48c to 1.58c; hoops, 1.63c; smooth finished machinery steel, 1 inch and larger, 1.73c; shafting, 60 per cent off list for carload lots, 55 per cent off for less than carloads.

PHILADELPHIA

Delivered in consumers' plants in Philadelphia and vicinity: Steel bars, 1.55c to 1.60c on contract and common bar iron, 1.30c to 1.40c. Cut nails 1.80c to 1.90c. Philadelphia. Shafting 62 and 60 off in carloads and 57 and 55 off in less than carloads in base territory.

NEW YORK

Soft steel bars delivered in the metropolitan district, 1.56c; common iron bars, 1.32c to 1.45c.

Bolts, Nuts and Rivets

Rivets

Button head structural rivets, 1.80c to 1.85c Pittsburgh, cone head boiler rivets, 1.90c to 1.95c. Small rivets, 80 and 10.

Structural rivets, Chicago, 1.95c, boiler rivets, 0.10c extra.

Bolt and Nut Discounts

(Delivered within 20-cent freight radius.)

Carriage bolts, ¾ x 6 inches, small and shorter, rolled threads, 80 and 2½; cut threads, 75 and 17½; larger and longer, 70 and 15.

Machine bolts with hot pressed nuts, ¾ x 4 inches, smaller and shorter, rolled 80 and 7½; cut, 80 and 2½; larger and longer, 70, 10 and 10.

Gimlet and cone point lag or coach screws, 80 and 20.

Hot pressed square, blank or tapped nuts, $6.00 off list; hot pressed hexagon blank or tapped, $6.70.

Cold pressed C. & T. square, blank or tapped, $5.80 off; hexagon, blank or tapped, ⅝ inch and larger, $6.80 off; ½-inch and smaller, $7.40.

Wire Products

PITTSBURGH

Wire nails, jobbers' carload lots, $1.60; retailers' carload lots, $1.65; cut nails (western makers), jobbers' lot, $1.65; painted barb wire jobbers' carload lots, $1.65; retailers' carload lots, $1.60; plain wire to jobbers in carloads, $1.40; and to dealers in carloads, $1.45; polished staples, $1.60; galvanized staples, $2.00.

CHICAGO

Wire nails, jobbers' carload lots, $1.78; retailers' carload lots, $1.83; retailers' less than carload lots, $1.88; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.83; retailers' less than carload lots, $1.88; with 40c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Cast Iron Pipe

CHICAGO

Four-inch water pipe, $27; 6 to 12 inches, $26; larger sizes, $24; gas pipe, $1 a ton higher.

NEW YORK

Six-inch pipe, 30 pounds to the foot, $23 to $24, f. o. b. New York, in carload lots.

BIRMINGHAM

Water mains: 4-inch, $21.50; 6-inch and up, $19.50. Gas main: $1 per ton higher than water main. Special fittings, $47.50 to $52.50.

Old Material

PITTSBURGH

(Gross Tons Delivered.)

Heavy melting scrap	$11.75
Rerolling rails	13.50 to 14.00
Malleable	11.50 to 12.00
Bundled sheet scrap	7.50 to 8.00
Iron axles	23.50 to 24.25
Old iron rails	14.50 to 15.00
Stove plate	9.00 to 9.25
No. 1 wrought scrap	12.50 to 13.00
Old car wheels	12.00 to 12.50
Low phosphorus	14.25 to 14.75
Machine shop turnings	7.00 to 7.25
No. 1 busheling	9.50 to 10.00
Cast borings	7.50 to 8.00
No. 1 cast scrap	12.00 to 12.25

PHILADELPHIA

Gross tons delivered to consumers' plants, in eastern Pennsylvania and western New Jersey:

Old iron rails (nominal)	$16.00 to 16.50
Old steel rails (rerolling)	13.50 to 14.00
No. 1 heavy melting steel	10.50 to 11.00
Old car wheels	12.25 to 12.75
Old iron axles (nominal)	22.00 to 23.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	13.50 to 14.00
Wrought pipe	9.50 to 10.00
Cast borings	2.50 to 2.75
Machine shop turnings	7.00 to 7.50
Heavy cast (broken)	13.00 to 13.50
Malleable	11.00 to 11.50
Stove plate	9.50 to 10.00
No. 1 forge	8.00 to 8.50
Low phosphorus	15.00 to 15.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg, and Steelton, Pa.; $1.40 to Milton, Pa.

CLEVELAND

Gross Tons

Old iron rails	$12.50
Old steel rails (under 3 ft.)	12.00 to 12.50
Old steel rails (over 6 ft.)	11.50 to 12.00
Relaying rails	23.00 to 25.00
Old steel boiler plate	8.00 to 8.50
Malleable iron (railroad)	11.00 to 11.50
Axle turnings	6.00 to 6.50
Steel axles	16.50 to 17.00
Malleable iron (agricultural)	8.50 to 9.00
Heavy steel	9.50 to 9.75
Country mixed steel	8.00 to 8.50
Bundled sheet scrap	6.50 to 7.00

Net Tons

No. 1 R. R. wrought	$10.50 to 11.00
No. 1 busheling (nominal)	8.50 to 9.00
No. 1 machine cast	10.50 to 11.00
No. 1 dealers' wrought	8.00 to 8.50
Machine shop turnings	4.00 to 4.50
Pipes and flues	7.00 to 7.50
Wrought drillings	4.00 to 4.50
Cast borings	5.00 to 5.50
Stove plate	8.00 to 8.25
Wrought iron arch bars (nom.)	13.00
Wrought iron piling plate (nom.)	13.00

CHICAGO

(Delivered in consumers' yards.)

Gross Tons

Old car wheels	$11.50 to 12.00
Old iron rails	13.25 to 13.75
Rerolling rails (5 ft. and over)	12.00 to 12.50
Old steel rails (3 ft. and und.)	11.00 to 11.50
Frogs, switches and guards	9.75 to 10.25
Heavy melting steel	9.75 to 10.25
Shoveling steel	9.00 to 10.00

Net Tons

No. 1 R. R. wrought	$9.25 to 9.75
No. 2 R. R. wrought	8.25 to 8.75
Arch bars and transoms	12.50 to 13.00
Knuckles, couplers and springs	9.50 to 10.00
Shafting	13.50 to 14.00
Iron car axles	20.25 to 20.75
Steel car axles	13.75 to 14.25
Locomotive tires	11.00 to 11.50
Dealers' forge	8.50 to 9.00
Pipe and flues	7.00 to 7.50
No. 1 cast	10.50 to 11.00
No. 1 busheling	7.75 to 8.25
No. 2 busheling	6.25 to 6.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	10.25 to 10.75
Cast borings	4.50 to 5.00
Machine shop turnings	4.25 to 4.75
Agricultural malleable	9.00 to 9.50
Railroad malleable	9.50 to 10.00
Angle bars, splices, etc., iron	13.00 to 13.50
Angle bars, steel	9.00 to 9.50
Stove plate and light cast scrap	8.75 to 9.25

NEW YORK

Gross tons, New York dealers' prices at tidewater, usually for eastern Pennsylvania delivery:

Old car wheels (nominal)	$10.50 to 11.00
Heavy steel axles	15.25 to 15.50
Steel shafting	14.00 to 14.50
No. 1 heavy melting steel	8.50 to 8.75
No. 1 R. R. wrought	11.00 to 11.50
Wrought pipe (not galvanized)	8.00 to 8.50
Cast borings	5.50 to 6.00
Machine shop turnings (nominal)	5.50 to 6.00
Heavy cast	10.50 to 11.00

Stove plate	7.50 to 8.00
Grate bars	6.50 to 7.00

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50; from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

CINCINNATI

Gross Tons

Old iron rails	$11.00 to 11.50
Old steel re-rolling	9.50 to 10.00
Old iron axles	15.50 to 16.00
Heavy melting scrap	8.50 to 9.00
Relaying rails	18.50 to 19.00

Net Tons

Old No. 1 R. R. wrough	$ 8.50 to 9.00
Bundled sheet scrap	4.50 to 5.00
No. 1 yard wrought	6.50 to 7.00
No. 1 machine cast	9.00 to 9.50
No. 1 busheling	6.50 to 7.00
Stove plate	6.25 to 6.75
Machine shop turnings	4.50 to 5.00
Cast borings	4.00 to 5.00
Heavy turnings	5.00 to 5.50
Mixed cast	7.50 to 8.00
Breakage	5.00 to 6.00
Malleable	6.50 to 7.00

BIRMINGHAM

Old iron axles (light)	$15.00 to 15.50
Old steel axles (light)	15.00 to 15.50
Old iron rails	12.50 to 13.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.00 to 10.50
No. 1 country wrought	9.50 to 10.00
No. 2 country wrought	8.50 to 9.00
No. 1 machinery cast	10.50 to 11.00
No. 1 steel scrap	10.50 to 11.00
Standard car wheels	12.00 to 12.50
Tram car wheels	10.50 to 11.00
Light cast and stove plate	9.00 to 9.25

BUFFALO

Gross Tons

Heavy melting steel	$9.75 to 10.50
No. 1 R. R. wrought scrap	12.50 to 13.00
No. 1 R. R. and mch. cast scrap	12.00 to 12.50
Old steel axles	17.00 to 17.50
Old iron axles	22.50 to 23.00
Car wheels	11.75 to 12.25
Railroad malleable scrap	11.25 to 11.75
Machine turnings	5.25 to 5.75
Heavy axle turnings	8.00 to 8.75
Cast iron borings	5.50 to 6.00
Low phos. steel scrap	16.50 to 17.00
Old iron rails	15.00 to 15.50
Boiler plate sheared	12.00 to 12.50
Bundled sheet scrap	7.00 to 7.50
Stove plate (net ton)	9.75 to 10.00
Locomotive grate bars	9.50 to 10.00
No. 1 busheling scrap	9.00 to 9.50
No. 2 busheling scrap	7.00 to 7.50
Wrought pipe	8.50 to 9.00

ST. LOUIS

(Dealers' buying prices.)

Gross Tons

Old car wheels	$10.25 to 10.75
Old iron rails	11.00 to 11.50
Re-rolling rails (5 ft. and over)	10.50 to 11.00
Old steel rails (3 ft. and und.)	9.00 to 9.50
Light sec. relayers (45 pounds and und.) subject to inspec.	23.00 to 23.50
Relaying rails subject to inspec.	23.00 to 23.50
Frogs, switches and guards	8.50 to 9.00
Shoveling steel	8.00 to 8.50

Net Tons

No. 1 railroad wrought	$9.00 to 9.50
No. 2 railroad wrought	8.50 to 9.00
Arch bars and transoms	12.00 to 12.50
Knuckles, couplers, springs	8.00 to 8.50
Shafting	12.50 to 13.00
Steel car axles	14.00 to 14.50
Iron car axles	17.00 to 17.50
Locomotive tires	10.00 to 10.50
Pipe and flues	6.00 to 6.50
Tank iron and cut boilers	6.00 to 6.50
No. 1 cut busheling	8.00 to 8.50
Cast iron borings	3.00 to 3.50
Machine shop turnings	4.00 to 4.50
Railroad malleable	7.50 to 8.00
Agricultural malleable	6.00 to 6.50
Stove plates	7.00 to 7.50
Angle splice bars (iron)	10.00 to 10.50
Angle splice bars (steel)	8.00 to 8.50

Store Prices

CINCINNATI

Steel bars, 1.85c to 2c; iron bars, 1.80c to 1.90c; plates and shapes, 1.95c to 2.10c; sheets, blue annealed No. 10, 2.15c to 2.20c, black, No. 28, 2.65c; galvanized, No. 28, 3.75c; cold rolled shafting, round, square, hexagon and flat, 55 to 58 off.

CLEVELAND

Steel bars, 2.00c; plates and shapes, 2.10c; iron bars, 2.00c; sheets, No. 16 blue annealed, 2.40c; No. 28 black, 2.85c; No. 28 galvanized, 3.95c.

CHICAGO

Steel bars, 1.85c; iron bars, 1.85c; hoops, 2.50c; shapes and plates, 1.95c; No. 10 blue annealed sheets, 2.15c, black, No. 28, 2.75c; galvanized, No. 28, 3.80c.

PHILADELPHIA

Steel bars, 1.85c to 1.90c; structural shapes, 2.00c; plates, 2.00c.

NEW YORK

Steel bars, 2.00c; structural shapes, 2.05c; plates, 2.05c.

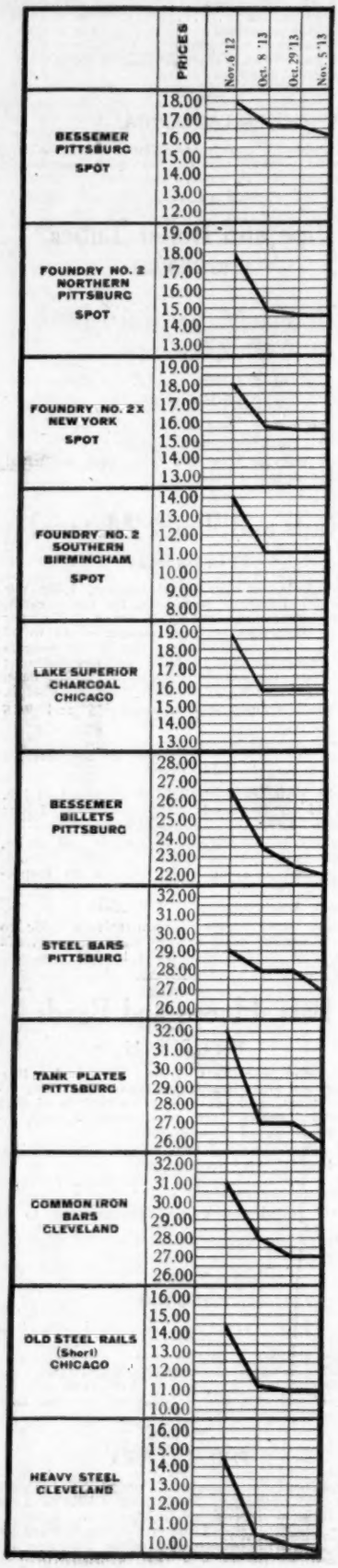
Housing Employes.—Housing problems in connection with steel plant employes and the methods used to meet them on the part of the larger interests of this country are treated in the September issue of the *Bulletin* of the American Iron and Steel Institute, just issued. The issue is enriched by scores of halftones of houses actually in use by employes, with description of equipment and rentals.

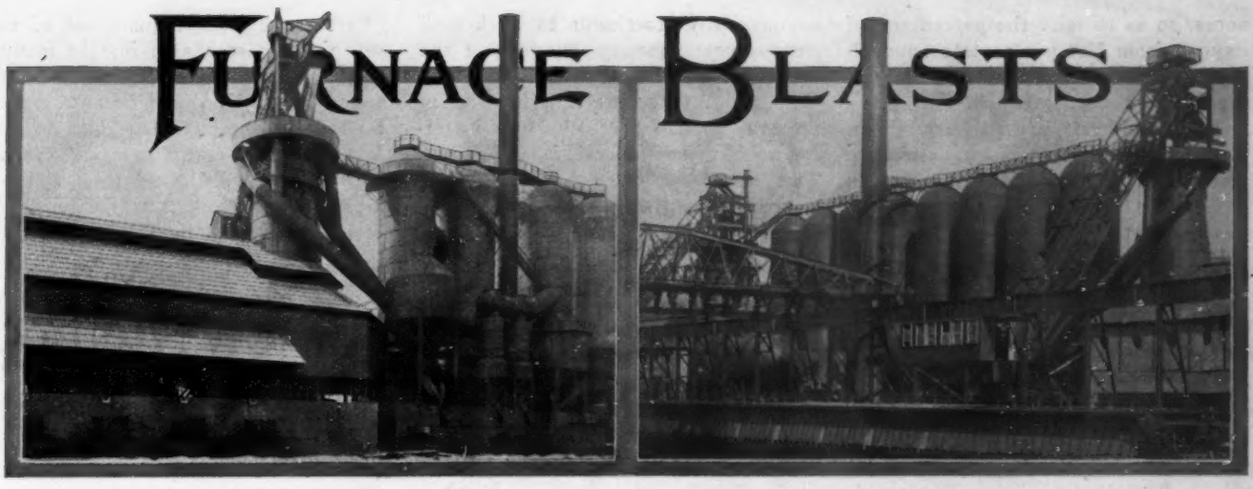
To Build Can Plant.—The Continental Can Co. has purchased a tract of five acres of land on Hoboken avenue, along the Delaware, Lackawanna & Western railroad, in Jersey City, upon which it proposes to erect a plant estimated to cost $250,000.

The Myers Machine Tool Co., Columbia, Pa., recently was incorporated with a capital of $50,000 with a view to enlarging its manufacturing facilities, but it is not yet ready to announce just what plans will be carried out in this direction. The business was established about four years ago and has been carried on under the name of C. A. Myers. The products of the company include an 11-inch engine lathe, a power hack saw, a number of sizes of emery grinders, a 10-inch sensitive drill press, and arbor presses. The company has offices and sales rooms at 249 North Third street, Philadelphia.

Property of the Middleby Auto Co., Reading, Mass., has been sold to J. E. Conant & Co., Lowell, Mass., for $30,275. Some of the machine tools will be exported to England and others to Canada.

PRICE CHART





Enriching the Blast With Free Oxygen

At the furnace plant of one of the leading iron smelters of Belgium, known as the Societe Ougree-Marihaye, some experiments are in progress at the present time to determine the effect of enriching the furnace blast by the addition of free oxygen. Already this has resulted, according to an unofficial statement, in an increased output approximating 12 per cent, with a saving in fuel of nearly 5 per cent. The process used promises, therefore, to be of considerable value to the industry.

In order to understand what is being attempted, it will first be necessary to consider the constituent elements of the air, as entering into the normal furnace blast.

Air is not a chemical compound, like water, but a purely mechanical mixture. In its ordinary state, at sea level, it is composed of 78.06 per cent nitrogen, 20.8 per cent oxygen, 0.94 per cent argon, 0.03 per cent carbon dioxide, and various inert gases known as helium, neon, krypton and xenon, together with substances carried in suspension, such as water vapor, dust, ammonia, nitrous and nitric acids, sulphurous and sulphuric acids, bacteria, spores, etc. To these, of course, may be added, under varying local conditions, any other substances given off in natural or industrial processes.

The nitrogen of the blast is, for the most part, inert. It has no economic function of importance in iron smelting. Hydrogen, formed by the decomposition of the water vapor, exerts a certain influence which has been fully discussed in connection with the drying of the blast. Minor constituents of the air are practically negligible, and, therefore, it remains to consider the oxygen, which is the element that chiefly—in fact, almost entirely—concerns the furnace operator. This may not always be true, for metallurgists realize that they are in the infancy of their knowledge of the reaction occurring in the blast furnace; but at present, apart from the composition of the burden itself, the influence of the oxygen is paramount.

Economies of Pure Oxygen

If it were economically possible to work with pure oxygen, the production of carbon monoxide and, therefore, the reduction of the furnace charge could be quickly effected, resulting in a reduced consumption of fuel, greater speed in smelting and a much purer product. There would also be no necessity for heating the blast, thereby eliminating the stoves. From these facts, it is the natural conclusion that the greater the supply of oxygen in the blast, the more nearly such results will be approximated.

Consequently, the end to be attained, from a commercial standpoint, lies in the enrichment of the blast, if possible, with just enough oxygen to produce the maximum economy (including any increase in the value of the product) at the lowest relative cost of securing the additional oxygen, with allowance for any by-product.

The condensation of oxygen from the atmosphere is mechanically a simple matter. Briefly stated, it is accomplished by liquefying the air, allowing the nitrogen and other gases, which are more volatile, to pass off, and finally compressing the oxygen into tanks or holders, the same as fuel or illuminating gas.

The plant used at Ougree for producing oxygen, as described by Gustave Transenster in a paper read before the Iron and Steel Institute, consists of three identical units, each yielding about 7,400 cubic feet of oxygen hourly. Each unit consists of:

(1) A compressor, belt-driven from an electric motor, which is capable of drawing in 44,000 cubic feet of air per hour and reducing it to 220 pounds pressure.

(2) A liquid-air machine and tower, containing all the fittings and appliances necessary for the liquefaction and separation of the air into oxygen and nitrogen.

(3) Two decarbonizing towers. It is of prime necessity that the air drawn in by the compressors and sent into the liquid-air machine should have every trace of carbon dioxide it contains removed. With this object the air is made to pass through two towers containing brick checker work, which is sprinkled with a solution containing soda.

(4) A battery of desiccators intended to remove any moisture contained in the air. This battery is interposed between the compressors and the liquid-air machine, and receives the air under pressure. The drying of the air is effected by means of calcium chloride.

Operation of the Plant

These operations, says Mr. Trasenster, are of the simplest description and the staff is small. The plant operates continuously. A single horsepower of energy suffices for the production of upwards of 40 cubic feet of oxygen; but with the compressors under construction, having approximately five times the capacities of those now used, no more than two-thirds of the present power, per unit of output, will be required.

The first series of experiments consisted of enriching the blast delivered to one of the company's existing fur-

naces, so as to raise the percentage of oxygen from 20.8 per cent to approximately 23 per cent. The furnace lining has not been affected.

Additional tests are to be made in a small experimental blast furnace recently built. A higher percentage of oxygen is to be used, and even pure oxygen is to be employed. If found commercially practicable to work with pure oxygen, thereby eliminating the heating of the blast, the waste gases from the furnace stack now used in the stoves can be utilized under boilers or in the cylinders of gas engines. This will supply considerably more motive power than is required for the production of oxygen.

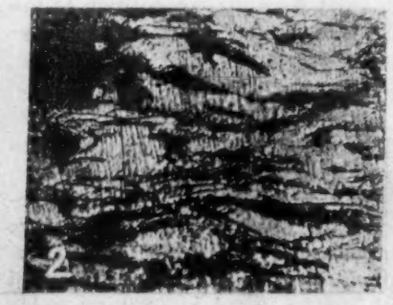
Furthermore, large quantities of nitrogen will be available for the manufacture of nitrate fertilizers or other by-products. The experiments point to possibilities which may open to the blast furnace operator new and extensive fields of profit, and they will be watched with lively interest on both sides of the Atlantic.

Microscopic Examination of Steel by New Method

How the Specimens Are Prepared for Polishing, Etching and Photographing by a Rapid Process Evolved by Glasgow Metallurgists

A quick method of preparing steel fracture sections for microscopic examination and photographing is explained by Messrs. Alfred Campion and John M. Ferguson, of Glasgow, Scotland, in a paper read before the Iron and Steel Institue.

The ordinary procedure has usually presented obstacles, especially in the case of soft and ductile materials; as in the polishing operations the edges of the fracture become more or less rounded or worn, and the true nature of the fracture is not discernible. In order to overcome this difficulty, Rosenhain employed an ingenious method of embedding the fracture in copper, and then cutting through the copper and steel in the desired direction, much in the same way that the biologist embeds his specimens in wax before sectioning.



Magnification, 250 diameters

FIG. 1—SPECIMEN POLISHED BUT UNETCHED, SHOWING JUNCTION BETWEEN THE STEEL AND ALLOY

FIG. 2—SECTION THROUGH TENSILE FRACTURE OF STEEL PLATE TEST PIECE

This method of depositing copper (or iron) electrolytically gives excellent results, and is quite satisfactory where comparatively few specimens have to be examined, or where no great hurry is necessary. It requires, however, strict attention to details, and it takes a considerable time to obtain a deposit ⅛ inch in thickness.

Messrs. Campion and Ferguson had occasion, not long ago, to examine a very large number of fractures of static and impact tensile and other test pieces. The time at their disposal was, however, too short to allow of their being prepared by the Rosenhain method of electrolytically-depositing copper or iron, and they were led to consider the possibility of other methods. It occurred to one of them that it might be possible to cast an easily fusible alloy around the fractured end of the test bar and then section and polish.

The conditions to be met appeared to be as follows:

1.—The alloy must be of such a nature that it would readily penetrate into and fill up the minute fissures in the fracture.

2.—The alloy must be sufficiently hard and strong to support the edges of the fracture during polishing.

3.—The alloy must melt at a low temperature, so that no alteration of the structure of the material would be produced.

4.—The alloy must adhere closely and strongly to the specimen, and not be torn away from it during the operations of grinding and polishing.

5.—The alloy must exert no chemical or other action on the edges of the specimen.

6.—The alloy must be of such a nature that the edges of the fracture would show up sharply and clearly even after fairly strong etching.

Experiments were made with a number of alloys and eventually two were found that fulfilled the above conditions. The composition of these alloys was as follows:

	A parts.	B parts.
Bismuth	50	50
Lead	30	30
Tin	25	10
Zinc	3	..
Cadmium	..	10

Both alloys melt at temperatures below the boiling point of water, the melting point of *B* being about 25 degrees Cent. less than that of *A*. As a result of a large number of trials the alloy, *A*, was found to be the better for general work. The method adopted in preparing the sections was as follows:

The fractured test piece was dipped momentarily in hydrochloric acid of 1.1 specific gravity, and then in a solution of chloride of zinc prepared by adding zinc to strong hydrochloric acid until no further action takes place, and then diluting with an equal volume of water. The end of the specimen was then plunged into a quantity of the alloy at such a temperature as just to keep it molten, and contained in a small, deep, narrow mold or crucible. The cold specimen usually somewhat chilled the alloy and caused partial solidification. It was found advisable to remelt the alloy by gently warming the mold or crucible so as to allow of the escape of any air which might have been trapped, and also to insure perfect adherence between the alloy and the steel. The latter being lighter than the alloy, the specimen must be weighted or held down in the molten alloy to the necessary depth until solidification takes place.

When cold, sections may be cut in any desired direction by means of a fine saw. Polishing can then be carried out in the usual manner.

The illustrations show micro-photographs of sections of fractures prepared by this method, which give an

Magnification, 250 diameters

FIG. 3—SECTION THROUGH FRACTURE OF TENSILE IMPACT TEST PIECE

FIG. 4—SECTION THROUGH FRACTURE OF REPEATED IMPACT TEST PIECE

FIG. 5—SECTION THROUGH FRACTURE OF REPEATED BENDING TEST PIECE

idea of the results obtained. Fig. 1 reproduces the section of a tensile impact fracture of soft steel embedded in the alloy, polished, but unetched. It shows the junction of steel and alloy.

Figs. 2, 3, 4 and 5 are micro-photographs of etched sections of static tensile, impact tensile, repeated transverse impact, and repeated bending test pieces, respectively. The magnification is 250 diameters in all cases.

No advantage is claimed for this method over the Rosenhain system of deposition, except that it is very much quicker. A section can be prepared and a photograph obtained in about 30 minutes.

SINTERING

Discussed Before Engineers of Western Pennsylvania.

B. G. Klugh, field engineer of the American Ore Reclamation Co., New York, read an interesting paper on "Sintering Processes for Iron Bearing Materials," before members of the Metallurgical Section of the Engineers' Society of Western Pennsylvania, Oct. 28, at the initial meeting of that section in the society rooms, Oliver building, Pittsburgh. After speaking briefly of the increasing cost of the ore supply each year, Mr. Klugh said that there are at present large tonnages of ore rendered wholly undesirable because of the following characteristics: Exceedingly fine ores; ore containing combined and hygroscopic water; low grade ore requiring concentration and ores containing an objectionable content of sulphur. Aside from these, the speaker mentioned several other objections, including artificial products such as flue dust, pyritic residues and roll scale.

Mr. Klugh read an interesting history of the sintering process in this country and abroad. He described the Dwight & Lloyd process which has been the subject of several papers read before the American Institute of Mining Engineers, and was one of the principal topics under consideration at the meeting of the institute held in June, 1911, at Wilkes Barre, Pa. The material to be treated, Mr. Klugh explained, is intimately mixed with the fuel required and is then placed upon the apparatus, consisting of a permeable hearth over a tight wind box. Initial ignition is given the upper surface of the charge and combustion produced by a current of air downward through the bed.

After speaking of numerous plants abroad, Mr. Klugh spoke of the plant for treating iron bearing materials built at Birdsboro, Pa., at the blast furnace plant of the E. & G. Brooke Iron Co., which was put into operation Oct. 1, 1911. This plant consisted of a single unit. At the present time, there are five sintering plants in continuous operation in this country, all of which are producing a high quality of blast furnace material.

The sintering of flue dust, of particular interest to the iron and steel trade, was described. There are two ways, Mr. Klugh pointed out, of making low carbon flue dust out of high carbon flue dust. One method is by concentration; the other is by dilution. The process of dilution, at the present time, appears to be the more logical. The sintered product is far superior to the product from which it is made, and Mr. Klugh cited several instances where sintering plants had made toward greater efficiency and economy.

"One furnace, with the addition of 16 per cent of sinter to its burden, increased output 15 per cent with a decreased coke consumption of 14 per cent," Mr. Klugh said.

Sale of the entire plant of the Standard Tool & Wrench Co., Providence, R. I., has been ordered.

Will Manufacture Metal Furniture

The Imperial Metal Products Corporation, New York City, recently incorporated under the laws of Delaware with a capital of $500,000, for the manufacture of metal furniture and furnishings, operating on the patents of S. C. Entwistle, general manager, has awarded a contract for the construction of a plant at Keene, N. H., the contract going to a Worcester, Mass., concern. The plant is to be completed by Feb. 15, 1914.

The main building will be 61 x 255 feet, four stories, with a side addition, 18 x 60 feet, four stories, for elevators, stairs and lavatories, of brick and steel construction. A boiler plant adjoining will provide steam for heating building and ovens. Equipment will be electrically operated, power being obtained from a large hydro-electric plant nearby. Building plans were prepared by Geo. J. Hardway, New York City, and heating system designed by Robt. E. Leigh, M. E. A siding from the Boston & Maine will provide adequate railroad facilities.

The city of Keene, N. H., has granted the company exemption from all taxes, for a period of ten years, and the Keene Development Co. has given a building site of three acres for the erection of a plant.

Manganiferous Ores.—The annual report on the production of manganese and manganiferous ores, by D. F. Hewett, of the United States geological survey, has been published as an advance chapter from Mineral Resources for 1912, and copies will be sent to interested persons free on application to the director, U. S. Geological Survey, Washington, D. C.

Open-hearths of the Alton Steel Co., Alton, Ill., are ready for use and the first steel is expected to be made this week.

FAIR COMPETITION

Testified to in Hearings in Steel Corporation Suit

On Friday the proceedings in the United States Steel Corporation dissolution suit were adjourned, to be resumed in New York on Tuesday, Nov. 11. As there still remain a few witnesses to be examined in that city, counsel for the defense has been forced to alter its plans as to resuming in Pittsburgh. The trip to Pittsburgh and other cities in the middle west will therefore be postponed for a short time.

Witnesses last week comprised both customers and competitors of the Steel Corporation subsidiaries. The former testified that at the present time, as well as prior to 1911, when the present suit was filed, there does exist and did exist very active competition in the sale of steel products by the manufacturers. The competitors of the Steel Corporation described the conditions under which they have competed with the Steel Corporation. The competition of the latter, they said, has been fair and above board. They testified that there are absolutely no price agreements, or other understandings, and that each steel maker sells its products for the best prices it can get.

The witnesses included the following: Franz A. Assman, East Orange, N. J., director of the Continental Can Co. and president of the Standard Tin Plate Co., Canonsburg, Pa., buyer of pig tin and sheet bars; H. W. Logan, of F. L. Smith & Co., New York, buyer of large quantities of structural steel; William Smith, of John Hassell, Inc., manufacturer of wire nails, which sells its product in competition with other wire nail makers; Chester A. Wales, purchasing agent of the Federal Signal Co., Albany, N. Y.,, purchaser of poles, rubber covered wire, etc.; Robert A. Maharg, president of Selzer & Klahr, hardware jobbers, Philadelphia, who handle wire nails, fence wire and poultry netting; William G. Moler, eastern manager of the Corrugated Bar Co.; William E. Manning, general sales manager of the Youngstown Sheet & Tube Co., which competes in all its lines with the United States Steel Corporation and has found that its competition has always been severe, but fair; Samuel Porcher, Philadelphia, purchasing agent of the Pennsylvania railroad, buyer of steel rails and other steel products; Howard Marshall, of the E. W. Bliss Co., Brooklyn, buyer of plates, bars and other steel products; W. W. Lukens, secretary and treasurer of the Alan Wood Iron & Steel Co., Philadelphia, who testified that he attended some of the meetings of a sub-committee appointed at the so-called "Gary dinners"; Otto J. Bloss, the Reliance Architectural Iron Works, Brooklyn, purchaser of structural steel; Col. Madison F. Cole, of R. G. Cole Mfg. Co., buyer of plates, bars, tubes and other steel products; Victor Mauck, president of the John Wood Mfg. Co., maker of boilers, Conshohocken, Pa.; Paul Starrett, president of the George A. Fuller Construction Co., New York, purchaser of structural steel; Frank H. Gordon, general sales agent of the Lukens Iron & Steel Co., Coatesville, Pa., manufacturer of steel plates, who testified that his company sells its goods at varying prices and that there never is any agreement; J. D. Weiss, Montclair, N. J., of the Hyatt Roller Bearing Co., Harrison, N. J., large consumer of steel products, which buys about one-third of its tonnage from the Steel Corporation and finds that competition is very active; Harry D. Westfall, vice president and general sales manager of La Belle Iron Works, Steubenville, O., who testified that his company is absolutely independent, fixes its own prices and is bound by no agreements; Herbert Sanborn Smith, of Ossining, N. Y., vice president and general sales agent of the Standard Steel Co., Birmingham, formerly general sales agent of the Lackawanna Steel Co., who said that at meetings attended by plate makers and others prices were discussed but it was never understood that the companies represented at the meetings were to be bound to maintain certain prices.

Changes in Koppers Official Force

Additions to the official force of the H. Koppers Co., Chicago, will greatly strengthen the representation of this company in the sale and installation of by-product coking and by-product recovery plants in this country. C. J. Ramsburgh, formerly assistant chief engineer of the United Gas Improvement Co., New York City, succeeds T. V. Salt, who resigned to engage in consulting engineering work. H. J. Freyn, a well-known gas engineer, and until recently affiliated with the gas engine department of the Allis-Chalmers Co., Milwaukee, has been elected third vice president of the H. Koppers Co. Mr. Freyn formerly was chairman of the gas power section of the American Society of Mechanical Engineers, and his investigations of gas engine practice, both here and abroad, have won for him an international reputation in this field of endeavor. F. Puning is head of the company's recently established benzol department. Heinrich Koppers, president, is now in this country, but will leave for Germany shortly, although the date of his departure has not been fixed. As constituted at present, the official organization of the H. Koppers Co. follows: Heinrich Koppers, president; James C. McMath, vice president and general manager; C. J. Ramsburgh, second vice president; H. J. Freyn, third vice president; Samuel T. Brown, secretary and treasurer, and Allan Strale, chief engineer.

Iron Company Fails

Frank W. Blair, Detroit, has been made receiver of the Lake Superior Iron & Chemical Co. by an order of the federal court at Grand Rapids, Mich. Mr. Blair is chairman of the board of directors of the concern and president of the Union Trust Co., Detroit, which is administrator of the estate of the late Joseph H. Berry, one of the principal owners of the company.

This action is said to be part of the reorganization plan started a year ago and which has received the approval of practically all the English and Canadian bondholders. The company's capital stock comprises an authorized common stock issue of $10,000,000, of which $8,375,000 is outstanding, and $1,625,000 of preferred stock, all outstanding. It has issued $6,515,000 of an authorized issue of $10,000,000 of 6 per cent 25-year bonds, issued in 1910, and second mortgage bonds amounting to $1,500,000 also are outstanding.

Conditions prevailing for some time in the iron trade are said to have reduced funds when money was needed for interest payments on bonds. Large sums have been spent in improvements to increase output and the reorganization is designed to place the company on a firm basis.

Award of the arbitration board in the wage dispute between 42 eastern railroads and conductors and trainmen will not be filed until Nov. 10, agreement of counsel having been reached. Inability to review all the evidence in the 45 days allowed by law is the reason for the delay.

The Interstate Chemical Co., Jersey City, N. J., advises its two-story brick addition now being erected is for installing agitators, tanks, boilers and gas engines.

Hardware Manufacturers Meet at Atlantic City

Colonel Bope Discusses Business Ethics—Commissioner Davies Tells About a New Investigation to be Made by the Government

At the twenty-fifth convention of the American Hardware Manufacturers' Association, at Atlantic City, last week, Col. Henry P. Bope, vice president of the Carnegie Steel Co., delivered an interesting address on "Business Ethics". He said in part:

"It has not been so many years since the relations of courtesy, consideration and fair dealing were not so strictly maintained as they are today. Business was war, and you know what war is. To over-reach a competitor was the highest art of a salesman, and veracity was not infrequently sacrificed for success. Was it justified? That we have largely departed from such methods seems to me a sufficient answer. False statements might obtain a customer, but never retained him. What has made the change? It is an interesting subject and one which fairly lies within the scope of our subject. It has been largely due to the civilizing influence of ease of communication and travel, the bringing of men into closer and more frequent contact with each other. Before this occurred, men became centered merely in the success of their own affairs, and were indifferent to that of others. Self-centering leads to selfishness and exclusiveness and the narrowing of thought. Each man's problems were his own to be solved for his own best interests and too frequently without regard to the interests and rights of others. But with the development of the railroads, the greater ease and cheapness of travel, men began to live a wider and therefore a larger life. Travel expanded ideas and gave a different viewpoint in many respects. Then came the period so happily developed of organization and conference, of which this convention is such a striking example. Men learned first to respect the opinion of others. Then to find that problems were mutual and best results could be obtained by a comparison of methods and interchange of ideas on the various relations which trade produces. All knowledge was never concentrated in a single brain, human at least, not even forgetting Solomon, who made some mistakes, too, and men in their intercourse with others rapidly broadened.

"Business ethics also comprise the great forward movement of many corporations in what is called 'welfare work'. So much has been said on this subject in the past year that I feel it is unnecessary to more than bring it to your attention. Its details and methods are familiar to you. It certainly shows on the part of employes a recognition of their duty in respect to themselves and fair consideration of the rights and the needs of others. We must recognize that trade and operating obligations are on a different basis today from what they have ever been before. If the ten commandments have no place in the political world, as stated by an eminent Senator not so many years ago, they surely fill a large place in the commercial world. The principles of these commandments, as interpreted by the Great Teacher, are filling the minds and hearts of men, and whether they will or no, are largely animating their living and their relations to others. Lastly, let us for a moment face some of the problems in the business world

COL. HENRY P. BOPE,
Vice President, Carnegie Steel Co.

today which call for a patience and a forbearance rather remarkable in view of our ethical development along business lines.

"The manufacturer doing a large business, interstate in character, is not only called upon to have a wide knowledge of business principles and business law but to keep thoroughly posted on the legislation affecting his interests in the national congress and in the 48 state legislatures. It is an expense formerly unknown and should be unnecessary. Better a central authority by which to be directed, under, we will say, national license, than to watch such a multiplicity of enactments. Law-abiding and law-obeying as he desires to be and is, there is constant danger of trouble from sheer inability to keep posted.

"Then as to conferences with his competitors. Disregarding for the moment any question of price arrangements, though few such exist, there is a larger necessity for such action arising from the change in the character of product in many lines. In steel, for example, the wonderful character of the material, adapting itself to so many products and in such diverse ways, has produced specifications varied in character, rigid in requirements, and calling for severe inspection. This has led to greater costs of certain forms, entailing the listing of extas, due to such increased costs. These extras cannot be arbitrary, but must be scientifically determined by actual costs taken over a period of time and under conditions of both high and low production. A single manufacturer cannot always determine by his records what others should charge and so these very conditions call for conference and mutual adjustment. To determine such matters in this way is a benefit alike to producer and buyer. And as conditions change there must be readjustments to be determined in the same way. A buyer prefers a stable market or at least so nearly stable as to permit him to know what his materials will cost that he may fix the costs of his own product or determine his own selling price. Such conferences among producers should not be regarded with suspicion but looked upon as a trade necessity, which permits business to be carried on along untrammeled channels.

"In conclusion, as one of the great weeklies justly observed some two weeks ago, the era of destructive criticism is about over. It has done much good and some harm. That was to be expected. But now the people are demanding constructive action. The new tariff law is constructive legislation. The currency bill when enacted will be constructive legislation. The people want rest. They want to prove the effect of this legislation. What changes are to be made in future should be after expert study only and in the direction of such readjustments as are proved necessary by trial. The country is ready for another forward movement for a greater ethical expansion. It can only proceed by processes of construction and not those of destruction. The welfare of the whole people is a greater consideration than the political needs of any party and above individual exploitation. With this idea before us, and true to the ideals of honest business, the achievements of the past will be overshadowed in the accomplishments of the future."

A New Investigation

The beginning of a new scientific investigation of the industrial situation under direction of President Wilson, which will contribute to the administration trust legislation program at the session of congress beginning Dec. 1, was announced by Commissioner Joseph E. Davies of the bureau of corporations, in an address before the National Association of Hardware Dealers.

JOSEPH E. DAVIES
Commissioner of Corporations

Whether a competitive system of large units, or a monopolistic system is the most advantageous to society, is the question the bureau will attempt to determine.

"It is characteristic of the quality of mind of the president of the United States that he should desire facts on which to base his judgment," said Commissioner Davies. "There is now no governmental or other agencies engaged in attempting to get scientific information of this fact.

"We shall enter into this investigation with the sole intent of working out in a scientific and fair minded spirit the facts, absolutely as they are. So vital and so fundamental is this problem, that to attack it in any other spirit would be criminal. What is needed is light, not heat. The problem bristles with difficulty.

"It will demand an increased appropriation from congress. The results may not coincide with all we hope to procure but we can, however, obtain facts that will contribute toward correct interpretation of industrial conditions as they exist."

Commissioner Davies declared the ultimate solution of the trust problem depended on determination of the question his bureau is about to investigate.

Face Many Problems

That, he believes, to be a fundamental behind whether the problem might be solved by amendments to the Sherman law; by an industrial trade commission or by action looking to regulation of the individual states.

If the monopolistic system should be found to be most efficient there would still remain, he said, in spite of that fact, a question whether the government should maintain an attitude against monopoly by reason of other and greater additional evils it induces.

The American Hardware Manufacturers' Association and the American Hardware Jobbers' Association elected officers at their closing sessions last Friday.

Officers of the two associations were chosen as follows—Jobbers: W. D. Taylor, Cleveland, president; Bruce Hayden, San Francisco, and A. S. Bihler, Pittsburgh, vice presidents; T. James Fernley, Philadelphia, secretary and treasurer.

Manufacturers: N. C. Gladding, Indianapolis, president; William Metthai, Baltimore, Henry R. Towne, New York, and Charles J. Graham, Pittsburgh, vice presidents; F. D. Mitchell, New York, secretary and treasurer.

Will Build Open Hearth Plant

W. W. Lindsay & Co., consulting engineers of Philadelphia, recently secured a contract from the Broken Hill Proprietary Co., Ltd., New Castle, Australia, for the equipment of an open-hearth furnace plant. The contract covers the steel work required for three 60-ton open hearth furnaces, two soaking pits, ingot molds, charging boxes, cars, fluxes, etc. All the material will be forwarded in one shipment early in the year 1914, and will weigh approximately 300 tons. Plans and specifications were prepared by James B. Ladd, consulting engineer, Philadelphia.

IRON MINING NEWS

Ashland Mine Reopened

Following a three months' idleness, the Ashland mine at Ironwood, Gogebic range, is in commission again. The property is operated by Congressman E. A. Hayes and his brother, J. O. Hayes, both of California. Some ore will be shipped for the rest of the season, but for the most part the work will be confined to exploration and to the reconstruction of the No. 9 shaft, which is being provided with steel sets. Search for new ore bodies will be made principally in the western part of the property. A force of 125 men is being taken on, additions to be made as the work progresses. The Ashland formerly was operated by the Cleveland-Cliffs company and the lease was surrendered about a year ago. The mine is owned in fee by the Hayes brothers. At the western end of the Gogebic range, in Wisconsin, the Oliver Iron Mining Co. has abandoned the Plummer exploration, where it had been conducting work for many years. The equipment is being dismantled and will be shipped to Ironwood. Ore that would warrant development work was not found. The 30 men employed have been transferred to other Gogebic range mines of the company.

Mining Companies Protest

The state tax commission of Michigan has taken under advisement a protest by the Marquette iron range mining companies against the valuation placed on the ore in stock at the mines at the time R. C. Allen, state geologist, made his inspection with the purpose of determining at what sums this class of property should be assessed. It is the contention that the method of valuation employed works out results that are not equitable.

Prof. Allen treats the stockpiles as if they were immediately salable. He estimates their value on the basis of the Lake Erie prices of the different grades of ore, less the transportation and other selling charges. By this method he has figured a value of approximately $5,600,000 on the more than 1,800,000 tons in storage when he made his inspection. As a result, though the realty of the companies is assessed at some $2,000,000 less than formerly, the aggregate of valuations shows, on the tentative figures, an increase of approximately $3,000,000. And, in addition, all of the buildings owned by the companies and not used for mining purposes, which had previously been covered by the general assessment, are assessed separately.

The operators contend that the theory of the salability of the ore in stock will not stand scrutiny, for the ore cannot be marketed at the time. Some of the grades move slowly and there is no certainty when the stock now available will be cleared out.

Railroad Resumes Work

Work on the extension of the Chicago, Milwaukee & St. Paul railroad from Crystal Falls to Iron River is under way again, and will, it is understood, be pushed until completed. The most of the construction is finished and the bulk of the steel is laid. Such differences as had developed with the Chicago & Northwestern company relative to grades and crossings have been adjusted. It is assured now the road will be ready to handle ore traffic next spring. The extension has proved a costly undertaking. The company has been forced to pay excessive sums for right-of-way and other privileges and the total of these expenditures will reach several hundred thousand dollars. Ten years ago the company would have been voted a bonus, with the right-of-way donated.

New Shaft Sunk

With a depth of 65 feet attained, 15 feet of this in the ledge, the work of concreting the shaft at the new Athens property at Negaunee, Marquette range, is being started. The concrete will be carried down to the present depth, so that the shaft will be enclosed with thick and substantial walls for the distance that it penetrates the over-burden and will be firmly anchored in the rock. The erection of the mine buildings is in progress. The Athens will eventually be one of the deepest properties in the Marquette district.

To Increase Cuyuna Output

The management of the Soo line is preparing to handle a heavy shipment of ore from the Cuyuna range next season, its prospective volume being 2,500,000 tons. In order properly to take care of this great tonnage, 500 new steel cars of 50 tons capacity have been ordered.

Foremost among the producers represented in this tonnage will be the Rowe mine at Riverton, with an estimated output of 800,000 tons. Cuyuna range shipments over the Soo line for the present season up to Oct. 25 made a creditable showing, a tonnage of 690,789 having been reported as compared with 271,165 tons in the entire season of 1912. The Kennedy mine, the first property opened on the range, contributed 261,218 tons; Armour No. 1 shipped 105,086 tons; Armour No. 2, 157,744 tons; Pennington, 95,089 tons and the Thompson, 47,652 tons.

Shipments for the same period from the Gogebic range, over the Soo line have aggregated 789,800 tons as compared with 878,740 tons last year. The falling off is due to the closing of the Ashland mine, a temporary suspension due to an accumulation of water in the shaft and the necessity for repairs.

The laying of rails on the Soo's extension into the Iron Mountain Mining Co.'s mine in the Cuyuna district will be completed within 10 days and the first shipment of ore from that property will be made as soon as the cars reach the pocket. The shaft is down 112 feet and from 25 to 30 tons of ore will be hoisted daily.

The Duluth-Brainard Iron Co. will be among the Cuyuna producers next season. This company is now sinking a shaft, which is going down rapidly with three shifts employed. Among the new concerns operating on the range is the Cuyuna Iron Valley Mining Co., which is exploring north of Rabbit lake, where the indications are favorable for locating a very large ore body.

Stationary firemen in the textile mills at Lawrence, Mass., have demanded an eight-hour day, beginning Nov. 15. They threaten to strike if this is not granted. At present they work 12 hours a day, seven days a week.

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Broad Business Policies

Two noteworthy addresses were made at the twenty-fifth convention of the American Hardware Manufacturers' Association, held at Atlantic City last week. The subject "Business Ethics", afforded Col. H. P. Bope an opportunity, of which he availed himself, to give a very optimistic talk in regard to business methods and the improvement which has taken place in recent years. Col. Bope has lived long enough and has had experience enough fully to realize what the effects of the merciless competition of bygone years were. In striking contrast with the brilliant senator from Kansas, who declared that the ten commandments were an "iridescent dream", Col. Bope asserts that the principle of these commandments, as interpreted by the Great Teacher, are filling the minds and hearts of men and are largely animating their living and their relations to others. This is often true, whether the men realize it or not.

As to the relations of competitors to each other, Col. Bope shows how certain conferences are not only proper, but absolutely necessary. He deplores the multiplicity of laws relating to business affairs and even intimates that he would be willing to accept a national license law rather than comply with a multiplicity of enactments of 48 states. Finally, he concludes that the time of destructive criticism has passed and that now constructive action is demanded. He believes that the country is ready for another forward movement for a greater ethical standard, and that by adhering to the ideals of honest business, the achievements of the future will be far greater than those of the past.

All of this is sound document in striking contrast with the pessimistic comments of men of the type of George W. Perkins, who deplore present conditions as the worst the country has ever seen and are happy to reflect on the men in public life. In spite of the shortcomings of our present-day legislators, they are fairly representative of the people, and that is all that is to be expected in a republic.

The other address to which we refer is that of Hon. Joseph E. Davies, commissioner of corporations, who announced that a scientific investigation of industrial conditions is to be made under the direction of President Wilson. Mr. Davies said that the investigation would be entered into with the sole intent of working out in a scientific and fair-minded spirit the facts absolutely as they are. "So vital and so fundamental is this problem," he said, "that to attack it in any other spirit would be criminal. What we need is light, not heat." He added: "The economic aspects of the problem, the fair, just attitude of government to capital invested and men interested in and directing these great enterprises, as well as to the public at large, and what shall be done to preserve freedom of opportunity for business, is the problem to which congress will address itself in the immediate future." These are sound, sane words, which will be received with favor by business men of the country as an indication that the new commissioner of corporations is a fair-minded man. Investigation conducted in the spirit described by Mr. Davies will be helpful and along the lines of the constructive policy referred to by Col. Bope. We sincerely hope that it indicates the beginning of a new policy, broader and more just, in the handling of business problems.

Progressing by Co-operation

Every development tending to show the attitude of the Interstate Commerce Commission in regard to allowing railroads to increase freight rates is being watched very closely, and perhaps for this reason the recent action of the Commission in consenting to advances on commodity rates between Missouri river points has been given undue prominence. Certainly it is true that so far as the action in itself is concerned it was not very important. The really interesting feature about it was that the action of the Commission was the result of co-operation of shippers and railroads, and indicates what may be done by men whose interests are supposed to be antagonistic sitting down and reasoning together. It is easier perhaps at times to convince shippers of the justice of higher freight rates than to convince the Interstate Commerce Commission, which feels that in guarding the interests of the people, and particularly of the shipper, it must not consent to advances unless very positive proof of their justification is presented. When, in the present case, the carriers operating be-

tween Missouri river points proposed to advance a number of rates, protests were filed by several commercial bodies representing the shippers, and then a conference of the protestants and railroad men was held and it was agreed that some of the present rates should be continued and certain advances granted. Thereupon the protest was withdrawn and the Interstate Commerce Commission approved the action taken.

No one will object to a decision which satisfies all the parties directly concerned, and we believe that much progress could be made by similar conferences on a larger scale. In the iron and steel business, for instance, leading men like Judge Gary have signified their willingness to have rates advanced as deemed proper by the Commission. Shippers of iron and steel know that railroad prosperity means prosperity for the iron and steel business. Hence they are willing to pay somewhat higher freight rates, if the railroads are entitled to them. We believe that the same is true of other lines of manufacture. It is to be hoped that when the hearings are started, Mr. Brandeis, who has been employed by the Interstate Commerce Commission, will not be allowed to follow his usual tactics of bitter opposition to anything that the railroads favor. If he does, serious antagonism will be aroused. It should be the aim of the Commission and of all concerned to get at the facts and render a fair decision.

Among the inventors of puzzles, the authors of the income tax will take high rank. One of the peculiarities is that Mr. Carnegie may escape the normal tax entirely on account of the provision in the bonds of the Steel Corporation, which binds the company to assume itself any tax like this collectible at the source of the income. Many other corporations have similar provisions in their bonds.

Season Tin Plate Price Fixed

While the iron and steel markets generally are halting, the tin plate trade follows its custom and is closing up business for the new year. On Monday, the American Sheet & Tin Plate Co. announced its tin plate price for the new season, and an active buying movement is expected to ensue at once. It is the custom in the trade for all large consumers to place contracts for the season, and this buying usually centers in the month of October. Last year the season tin plate price was announced unusually early, the first week in September, while this year the price is named rather late, suggesting that the buying movement will be correspondingly more brisk.

The new price of $3.40 per base box for 100-pound coke bright plates represents a reduction of 20 cents a box from the standard price for the season just closed. The reduction is in recognition of the decline in the two chief raw materials, as pig tin is down several cents a pound from a year ago and sheet bars are down a few dollars a ton.

The total production of tin plate is now running at approximately a million gross tons a year, or more than double the tonnage made in any year prior to 1906. While the entire tonnage for a year will not, of course, be placed under contract during the next few weeks, a very large part of the tonnage will be, so that the fixing of the price is an important market event, and a particularly interesting one at this time, when the average buyer of steel products is not disposed to look ahead.

Substitutes for the Saloon

Secretary Towson, of the industrial department of the international committee of Young Men's Christian Associations, New York, writes as follows:

> EDITOR THE IRON TRADE REVIEW:—Your editorial of Oct. 23 on "Back with the Saloon" suggests the question of a substitute for the saloon. In view of the demand for greater efficiency and the present-day need for multiplying agencies that beget good will, it is not surprising to find that scores of industries are making use of the modern industrial type of Y. M. C. A. work and in 80 or more smaller industrial communities, buildings have been erected at a cost of $1,500,000, entirely by the companies and that these same companies contribute in cash $175,000 a year for maintenance, and even more significant is the fact that the workers themselves contribute as large an amount in membership fees, etc.
>
> Everyone of these associations is in a large measure a substitute for the saloon. Prohibition, restriction and regulation are of great advantage, but no destructive force like the saloon will be effectively displaced except by the process of substitution. On most of the great railroads today and in an increasing number of industrial centers, the Y. M. C. A. is operating restaurants, rest rooms and hospitals and is furnishing safe social centers and demonstrating a constructive value that justifies all of the investment and more. CHAS. R. TOWSON.

Mr. Towson is right. The Y. M. C. A. is an active competitor of and substitute for the saloon, and more of the branches, and perhaps meeting places of other kinds of organizations, are required to take the place of saloons that are going out of business. In the city of Cleveland, at an early date, 900 saloons will be put out of business by the operation of the new license law. So far, there is nothing to take the place of any of them. One of the great weaknesses of the anti-saloon movement has been its apparent inability or unwillingness to establish institutions to take the place of the saloon, but sooner or later the imperative necessity of such work will be recognized. Great advance has been made in industrial cities in establishing branches of the Young Men's Christian Association. As Judge Gary has well said, the Y. M. C. A. builds up the character of the men and therefore increases their efficiency. Supt. Wirt, of the public schools at Gary, declares that there has been a tremendous advance in the civic welfare movement since the establishment of the Gary Young Men's Christian Association. Similar testimony comes from industrial centers in all parts of the United States.

CATALOGS

DRILLS.—A high-speed ball bearing drill, built by Baker Bros., Toledo, O., is illustrated and described in a recent publication of that company.

KEYSEATERS AND SLOTTERS.—The Colburn keyseater and slotter is described in a 62-page catalog issued by Baker Bros., Toledo, O. The catalog is handsomely illustrated, containing photographs and descriptions of the different sizes of machines manufactured by the company.

DRILLS, BORING AND TAPPING MACHINERY.—The line of high-speed drills, boring and tapping machines manufactured by Baker Bros., Toledo, are illustrated and described in a 43-page catalog recently published.

WELDING.—The thermit process of rail welding is described by the Goldschmidt Thermit Co., 90 West street, New York, in a recent publication. The book describes the latest improvements in rail welding and contains a number of service photographs.

GAS ENGINES.—In an eight-page bulletin issued by the Mesta Machine Co., Pittsburgh, its extensive line of gas engines, designed for any fuel gas, such as producer, blast furnace, coke oven or natural, is illustrated and described. Numerous views also are included showing installations of engines of this type.

SOOT CLEANERS.—G. L. Simonds & Co., 115 South LaSalle street, Chicago, have published a book on economical steam production which gives interesting data on the relation of soot to boiler efficiency. The book contains a number of facts never before published and will prove of value to managers and engineers of boiler plants. The company handles the Vulcan soot cleaner.

AIR COMPRESSORS.—In a bulletin recently issued by the Sullivan Machinery Co., Chicago, its angle compound, belt-driven air compressor, adapted to foundry and other industrial service, is illustrated and described. Other bulletins issued by this company are devoted to small air compressors for varying service. A small booklet published by this company contains numerous illustrations of the line of compressors built, with considerable data regarding sizes, dimensions and the application of these machines.

CENTRIFUGAL PUMPS.—The A. S. Cameron Steam Pump Works, 11 Broadway, New York City, has issued a bulletin illustrating and describing its new line of double suction volute centrifugal pumps. In addition, the bulletin contains considerable detailed information regarding the construction of this pump, which is built with an enclosed impeller and horizontal split casing, providing ready access to all internal parts. An efficiency chart, figures on pressures, etc., which should prove of value to engineers, also are contained in this bulletin.

MILLING MACHINES.—The Cincinnati Milling Machine Co., Cincinnati, has published a catalog descriptive of its line of milling machines. The catalog is 8½ x 11 inches, the standard size recommended by the committee of the A. S. M. E., and enables the company to use larger illustrations and give more complete descriptions of the various types of machines. Additional data not covered in previous catalogs are contained in the new publication, while mention is made of the company's line of cutters, grinders and semi-automatic manufacturing machines. The catalog contains 128 pages.

BLAST FURNACE AND ROLLING MILL EQUIPMENT.—A handsomely illustrated catalog of its products which embrace blast furnace and rolling mill equipment, conveying machinery, harbor and ship building equipment, mining machinery, etc., has been issued by the Deutsche Machinenfabrik, A. G., Duisburg, Germany, represented in the United States by Neumeyer & Dimond, 82 Beaver street, New York City. The company also has issued a 92-page brochure, which traces its organization and development. The Deutsche Machinenfabrik is a combination of the Benrath Machinenfabrik, A. G., of Benrath; the Ludwig Stuckenholz plant, of Wetter, and Bechem & Keetman, of Duisburg, Germany. This brochure is well illustrated and contains views of the company's plant and of many of its machinery installations.

PERSONALS

E. P. CRAWFORD, president of the McKeesport Tin Plate Co., McKeesport, Pa., recently was elected a director of the Bank of Pittsburgh.

S. W. BRAINERD has resigned as superintendent of the works of the Automatic Sprinkler Co. and is connected with the United Engineering & Construction Co. at Cleveland.

W. J. FREY has been appointed supervisor of materials for the Lake Shore & Michigan Southern Railway Co., with headquarters at Cleveland, to succeed H. W. Gardner, resigned.

J. E. MATTHEWS, who for several years past has represented the Bethlehem Steel Co. in England, has been called to the plant at South Bethlehem, Pa., and made manager of the ordnance department.

W. M. MacCLEARY has been appointed general sales manager for the Portsmouth Steel Co., Portsmouth, O., vice Maynard French, resigned. A. P. Scherer succeeds Mr. MacCleary as assistant sales manager.

WILLIAM E. M. HENRY, for 16 years auditor of the Cambria Steel Co., who installed and perfected its accounting and cost system, has opened an office for consulting practice in all matters pertaining to manufacturing accounts and costs, at 1420 Chestnut street, Philadelphia.

JOSEPH G. BUTLER Jr. tendered a dinner to Samuel Rea, president of the Pennsylvania railroad, at the new Ohio hotel, Youngstown, Oct. 31. The guests included directors of the Pennsylvania railroad and of the Pennsylvania lines west, the inspection party of both roads and representatives of the industries at Youngstown.

C. B. PHILLIPS has been elected president of the Acorn Brass Works, Aurora, Ill., to succeed E. W. Wray, who retired as president and general manager to devote his time to the sales and field work. Other officers are as follows: Vice president, E. W. Wray; second vice president, C. E. Padden; secretary, P. Q. Wray; treasurer and general manager, J. C. Ruth.

OSCAR A. NEFF, Slatington, has been elected president of the Lehigh Water Gap Bridge Co., Lehigh Gap, Pa. H. T. Craig, Lehigh Gap, was elected secretary, treasurer and general manager. Directors of the company are: Jacob C. Loose and Douglas Craig, Mauch Chunk; Thomas Craig, Lehigh Gap; Granville Hahn, Walnutport; Charles Craig and Oscar A. Neff, Slatington.

GEORGE F. COLLISTER, for three years assistant to the general superintendent of the Cleveland Twist Drill Co., Cleveland, will be at the head of the tool steel sales department of the Betz-Pierce Co., of Cleveland. This company is sales agent for tool steel of the Colonial Steel Co., Pittsburgh. Since graduating from Case School of Applied Science in 1905, Mr. Collister has been employed in the manufacturing departments of several concerns which use large quantities of tool steel. While at the Cleveland Twist Drill Co., in addition to other work, he had charge of the design and manufacturing of special tools.

TRADE NOTES

COLUMBIA, PA. — The Myers Machine Co., a going institution, has taken out a state charter with capital of $50,000. The facilities of the company are to be enlarged as a result of this step.

DETROIT. — The Michigan Machine Co. has decreased its capital stock from $150,000 to $100,000.

ELROY, WIS.—B. Elroy Bauer has sold his interest in the Elroy Garage & Machine Works to his partner, Royal Gibbons. Mr. Bauer will engage in the same business at Sterling, Kan.

KALAMAZOO, MICH.—The name of the Gerline-Myers Brass Foundry Co., Kalamazoo, Mich., has been changed to The Gerline Brass Foundry Co. Samuel B. Myers has sold his interest in the company and is succeeded as secretary-treasurer by Seymour H. Franklin. Officers are: President, Samuel Franklin; vice president and manager, Otto Gerline; secretary-treasurer, Seymour H. Franklin.

LOUISVILLE, KY.—The Harryman Machine Co., has discontinued business, the Imperial Wire & Iron Works, Louisville, purchasing a part of its equipment for installation in its new plant.

LOUISVILLE, KY.—The Louisville Steel & Iron Co. has taken out an Indiana charter with an authorized capitalization of $400,000 and George H. Holzzbog, Jeffersonville, Ind., president. The concern, which is now being financed, will use the old plant of the Louisville Bolt & Iron Works, Louisville, Ky.

MILWAUKEE.—The Milwaukee Stamping Co., manufacturing hardware specialties at Sixty-fourth and Pullen avenues, West Allis, has amended its articles to the effect of changing its official location from Milwaukee to West Allis.

NEW ALBANY, IND.—The buildings and machinery of the Ohio Falls Motor Co. will be disposed of at a receiver's sale November 26. Joseph Bruns is the receiver. Plans to reorganize the company and continue operations, made recently, were not carried out.

NEW YORK CITY.—Executive offices of the International Oxygen Co. have been removed from 115 Broadway, New York City, to the company's works, Newark, N. J. Additional buildings have been provided for the offices and to increase manufacturing space at the works. The general sales offices will remain at 115 Broadway.

OWENSBORO, KY.—Metal-working manufacturers had exhibits in a "Made-in- Owensboro" exposition held in that city recently. Among those which displayed their products were the Guenther-Wright Machine Co., Owensboro Shovel Co., Owensboro Forging Co., Southern Foundry Co., and Universal Stenotype Co.

PALMER, MASS.—Walter N. Taylor and Joseph E. Slattery have bought from Ralph B. Francis the Palmer Foundry.

PITTSBURGH.—John Eichleay Jr. Co., this city, has received a contract for erecting a two-story brick, steel and concrete fireproof mill building for the Pressed Steel Car Co. near McKees Rocks, Pa.

PITTSBURGH.—The Emerald Coal & Coke Co. has filed a certificate at Dover, Del., to increase capital stock from $1,000,000 to $2,000,000. The company was chartered at Dover, Aug. 14, 1898, with Julian Kennedy, W. M. Henderson and R. C. Crawford, all of pittsburgh, as incorporators, to acquire coal and coke deposits.

SOUTH BEND.—The Wire Specialty Machine Works, manufacturer of automatic wire forming machinery, recently changed its name to the Campbell Wire Specialty Works.

NEW BUSINESS

In New York, there has been an improved volume of inquiry during the past week in the machinery market. As far as actual orders booked were concerned, there was no improvement. The most important inquiry which has come out in this territory for some time is a list of machinery specifications which was put out last week from the office of W. T. Donnelly, consulting engineer, 17 Battery place, New York. It calls for railroad shop machinery having a value of between $100,000 and $200,000. Bids on this list are to be received by J. H. Guess, general purchasing agent of the Grand Trunk Pacific railway, Montreal, Que. No announcement has been made as to when the list is to be closed. The second-hand machinery market is characterized by an improved demand. More interest is now being shown in second-hand machinery than for a long time. This condition is reflected by the complaints of dealers that they are unable to buy as much second-hand equipment as they would like to. Demand for cranes is very limited and has been for some time, with the result that crane makers are running out of orders and are making every effort to get business to keep their shops busy. Competition is therefore unusually sharp and prices are quoted so low as to eliminate almost all profit. The brightest spot at present is the demand for machinery on the part of electrical manufacturers. Demand from abroad is also keeping up well and some machinery firms say they have never before sold as much machinery to foreigners as at present.

In Pittsburgh, machine tool builders and dealers report no change in the general situation. The market shows no immediate prospects of activity, and October was one of the quietest months for more than a year. A number of inquiries are pending, but consumers show hesitancy about closing transactions, on account of the uncertainty. Old equipment is being repaired wherever possible. Builders of heavy rolling mill machinery continue to enjoy satisfactory conditions and the larger shops are well filled with contracts taken earlier in the year.

In Chicago, the machinery market remains dull in common with other lines of business. A scattering of new business of the small variety has helped to sustain the situation during the past week. Manufacturers of steam engines and electrical equipment have recently booked some fair contracts. The Nickel Plate railway is figuring on some machine tool equipment of a minor character.

In Philadelphia, the machine tool market continues extremely sluggish and fails to show in any degree promises of that healthy activity which was predicted during the latter part of October. While inquiries are in fair volume, most of the dealers are pessimistic over the immediate future buying indications. All men in the trade are of the opinion that the uncertain, chaotic conditions are due to the unprecedented tightness of the money market. The foundry business does not travel parallel with the tool market, strange as it may seem, but is showing a marked improvement over both August and September. Builders of heavy rolling mill machinery are running their plants on full time.

In Cincinnati, practically all of the machine shops continue to operate far below capacity, with very little prospect of a betterment of conditions before the first of next year, if then. Makers of machine tools have apparently adopted a policy of conservatism until the effect of the new tariff bill recently enacted by congress has been better determined. Buyers, on the other hand, are only taking single tools, as they are actually needed, preferring to wait until some of the present uncertainty is cleared up before buying larger lots. Second-hand machinery has improved a little this fall, but it is far from satisfactory.

ALABAMA

TARRANT CITY.—The new plant of the National Cast Iron Pipe & Foundry Co., Tarrant City, near Birmingham, will be completed and ready for operation by Jan. 1, 1914.

ARKANSAS

LITTLE ROCK.—Thalman & Reed plan to add a second story to their warehouse. Estimated cost $6,000.

OZARK.—The Ozark Cotton Mill Co. plans to erect a factory here estimated to cost about $100,000.

CALIFORNIA

LOS ANGELES.—The Homer Motors Co. plans to erect a factory for the manufacture of Homer motors and heavy tractor and light delivery wagons. A foundry is included in the plans.

OAKLAND.—The Union Ice Co. is planning to erect a two-story reinforced concrete 125 x 220-foot plant.

OCEANSIDE.—The Standard Oil Co., San Francisco, recently purchased a site here, upon which it plans to erect a distributing plant to cost about $55,000.

RICHMOND.—F. A. Wright plans to erect a smelting plant on 15 acres north of this city. Estimated cost $75,000.

SAN DIEGO.—The Standard Oil Co. plans to rebuild its refining plant recently damaged by fire, at a loss of about $300,000.

SAN FRANCISCO.—John B. Kelly was recently granted a permit to erect a seven-story reinforced concrete factory building here.

CONNECTICUT

BRIDGEPORT.—The Aurora-Vulcan Co. is having plans prepared for a factory to manufacture spark plugs. The company was recently incorporated with a capital of $250,000. H. Billings, Bridgeport, is interested.

BRISTOL.—Announcement has been made by the Bristol Brass Co., Bristol, Conn., of an addition 100 x 100 feet to the rolling mill department. The Berlin Construction Co. has made the plans.

MERIDEN.—Ground has been broken for an addition to the foundry plant of Foster, Marriam & Co. The structure will be 50 x 150 feet, one-story, brick and steel. A trolley crane system will convey molten metal from cupola to molding floor.

DELAWARE

WILMINGTON.—The Consolidated Machine Co. has been incorporated; $1,000,000; by W. J. Maloney and O. J. Reichard, Wilmington.

DISTRICT OF COLUMBIA

WASHINGTON.—Sealed proposals will be received by O. Wenderoth, supervising architect, treasury department, until Dec. 1 for the construction complete, including mechanical equipment, of the United States post office at Burlington, N. J.

WASHINGTON.—Proposals for furnishing galvanized steel or iron, tool steel, cable, chain, steel wire, machine bolts, nuts, nails, screws, track wrenches, wrought iron or steel pipe, cast-iron pipe, bars, files, valves, cocks, etc., will be received until Nov. 13 by the general purchasing officer, Isthmian canal commission. Further information relating to these requirements (Circular No. 804) may be obtained on application to F. C. Boggs, major Corps of Engineers, U. S. A., general purchasing officer.

FLORIDA

CLEARWATER.—H. W. Plunkett, St. Petersburg, plans to erect a 100-room hotel here estimated to cost about $65,000.

JACKSONVILLE.—Plans were recently submitted to county commissioners for remodeling county jail here at a cost of $130,000. H. I. Klutho, architect.

TAMPA.—The Robinson Metal Co. has

been incorporated; sheet metal work; $10,000; by J. W. Crosy, et al., Tampa.

GEORGIA

ATLANTA.—John J. Woodside is planning to erect an eight-story concrete storehouse estimated to cost about $60,000.

IDAHO

COEUR D'ALENE.—J. D. Gibbs, head of the Stack Gibbs Lumber Co., will erect a paper mill on Spokane river between this city and Gibbs.

IDAHO FALLS.—The Allis Chalmers Co. has been awarded contract for furnishing additional equipment for municipal power plant to cost $4,500.

POCATELLO. — Engineering work has commenced on the power plant to be built by the Idaho Power & Light Co., which has acquired the interests of the Beaver River Power Co.

ILLINOIS

AURORA.—The Chicago, Burlington & Quincy Railroad Co. plans to erect new shops here to cost $400,000. A. Forsyth, Aurora, superintendent of shops.

CHICAGO.—The Tousey Varnish Co. plans to erect a two-story brick factory building estimated to cost about $15,000.

CHICAGO.—S. D. Childs & Co., makers of aluminum goods, plan to erect a 100 x 108-foot addition.

CHICAGO.—The Commonwealth Edison Co. plans to erect a one-story brick substation here estimated to cost about $28,500. Van Holst & Fyfe, architects.

CHICAGO—The Tonk Mfg. Co., manufacturer of woodenware, plans to erect a two-story, 100 x 125-foot brick factory. A. S. Alschuler, architect.

CHICAGO.—Construction has been started on the new plant for the Crane Co., Chicago, a large acreage having been bought on the southwest side. H. D. Burnham & Co. have completed plans for the buildings. Contracts have been let for an office building to cost $100,000. Plans have been filed with the building commissioner for the first unit of the plant, a two-story steel and concrete building to cost $500,000.

GALESBURG.—The Galesburg Malleable Castings Co., whose plant was recently damaged by fire, entailing a loss of $30,000, plans to rebuild at once.

It's too late to save this eye—but remember—there are others

When it comes, it comes *quick*. It's too late to dodge. The only way to avoid such accidents is to have the eyes fortified behind a pair of good, strong goggles.

Such a precaution means *safety to your workmen—safety to yourself!*

The eyes are your workmen's greatest assets; without them they are practically helpless; moreover, by protecting the eyes of your workmen you are insuring *yourself* against many an *expensive lawsuit* and *damage settlement.*

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Saniglas KING'S **SAFETY** GOGGLE

Made of the finest imported flat optical glass. Will not shatter or break under an ordinary blow. Allows a clear, unobscured vision of work at all times. Mounted on light white metal frames, eliminating the usual discomforts of goggles.

Many large Steel Companies, shops and railroads have already *made it compulsory* for all workmen in "eye risk" territory to wear goggles.

Think of this: *One firm alone, whose "lost sight" cases averaged 48 a month, has entirely eliminated them since using Saniglas Goggles!*

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INDIANA

MUNCIE.—Stockholders of the Muncie Wheel Co., Muncie, have elected: President, O. B. Bannister; vice president, E. S. Mills; treasurer, H. B. Bannister; secretary, H. J. Zimmerman.

SOUTH BEND.—The Singer Mfg. Co. recently commenced work on a 135 x 165-foot brick addition estimated to cost about $50,000.

TELL CITY.—The Tell City Brewing Co. will erect an addition to its ice factory, and will be in the market for the equipment in the near future.

IOWA

DES MOINES.—The city council plans to erect a bridge over the Raccoon river at Seventh street, estimated to cost from $85,000 to $100,000. Fred N. Carss, city engineer.

KENTUCKY

BOWLING GREEN. — M. H. Crump, county road engineer, is in the market for a rock-crushing outfit, road grader and other highway equipment.

LA CENTER.—A broom factory will be equipped by T. L. Carrol, who will be in the market for power and special equipment.

LEITCHFIELD.—The Leitchfield Light & Power Co., Leitchfield, Ky., advises damage to its plant in a recent fire is about $7,000 and that rebuilding is now under way.

LEXINGTON.—Power-driven sewing machines will be purchased by the Cliver & Donovan Mfg. Co., which has been organized to establish a shirt factory. The Lexington commercial club has details.

LOUISVILLE.—The Webster Loose-Leaf Filing Co., Snead building, has begun the manufacture of a patented paper punch. It has its own machine shop, but will probably purchase castings for the machine.

LOUISVILLE.—The Kentucky Wagon Mfg. Co. has decided to manufacture certain parts which it has purchased heretofore, and has been purchasing equipment for stamping, bending and drop forging.

LOUISVILLE.—The Henry L. Koehler Mfg. Co., which turns out a rotary bag printer, has removed its shop from 431 S. Center street to a building formerly used by the Louisville Bolt & Iron Works. A Brown & Sharpe milling machine has been installed.

PRINCETON.—The Illinois Central railway will be in the market for machine tools and other equipment, having appropriated $70,000 for the construction of a round-house and repair shop at Princeton.

LOUISIANA

NEW ORLEANS.—The H. W. Johns-Manville Co. plans to erect a six-story reinforced concrete building estimated to cost about $150,000.

MARYLAND

BALTIMORE.—The Crown Cork & Seal Co. plans to enlarge its plant at an estimated cost of about $50,000.

BALTIMORE.—The Colbert Canning Machinery Co. has been incorporated with a capital of $50 000.

BALTIMORE.—Lewis Baer & Co. are having plans prepared and will begin construction work soon on a four-story brick warehouse.

MASSACHUSETTS

BOSTON.—Charles Kolodny plans to erect a brick building estimated to cost about $80,000.

BOSTON.—The National Automatic Machine Co. has been incorporated; $500,000; by H. L. Stearns, D. H. Whipple and E. T. Morton.

BOSTON.—The Bennet Co. has been incorporated; machinery; $95,000; by F. M. Ryder, D. E. Manning and H. W. Sprague, Boston.

BOSTON.—The Wesner Drop-Arm Hanger Co. has been incorporated; $25,000; by Frank W. Wesner, 611 Washington street, Boston. Treasurer, A. E. Wesner.

BROCTON.—The White Automobile Co. has been incorporated; $30,000; by R. Litchfield, S. H. Freedman and P. H. Simmons, Brockton.

MICHIGAN

BENTON HARBOR.—The Benton Iron & Brass Foundries has been incorporated with a capital stock of $15 000.

COLUMBIA.—The Myers Machine Tool Co. has been incorporated with a capital of $50,000.

DETROIT.—Kaiser & Schmidt recently awarded contracts for two additions. Plans call for a five-story reinforced concrete and a four-story reinforced concrete building.

NILES.—The Invisible Door Check Co. recently began construction work on the first unit of its plant here. The building will be 60 x 160 feet of brick and concrete construction.

MINNESOTA

DULUTH.—The Western Rug Co. plans to erect a factory estimated to cost about $60,000. Anthony Puck, architect.

DULUTH.—The Consolidated Elevator Co. plans to erect a concrete elevator estimated to cost about $100,000, contract for which was recently awarded. Plans call for an 80 x 165-foot structure.

MINNEAPOLIS. — The Standard Motor Co., capitalized at $6,000,000, plans to erect a $3,000 000 plant for the manufacture of automobiles and motorcycles.

MISSISSIPPI

HATTIESBURG.—The Hattiesburg Foundry & Machine Works has been incorporated; $60,000; by F. A. Maddox, J. S. Love, F. W. Foote, et al.

MONTANA

GREAT FALLS.—The Great Falls Gas Co. has been incorporated with S. R. Jensen, president.

HARLEM.—The city has retained A. L. Jaqueth of Jaqueth Engineering Co., Kalispell, to prepare plans for municipal power plant, commercial lighting system and ornamental street lights.

KALISPELL.—The city council has ordered work to proceed on new 1,000,000-gallon concrete reservoir for municipal water system.

NEW JERSEY

HARRISON.—The American Fuse Co. plans to erect a 100 x 135-foot plant here estimated to cost approximately $22,000.

HOBOKEN.—The Badenhausen Water Tube Boiler Co. has been incorporated; water-tube boilers; $125,000; by H. Badenhausen, E. Utz, Hoboken; J. P. Bentley, Jersey City, N. J.

JERSEY CITY.—Charles Mundt & Son, manufacturers of perforated metals, whose plant was recently damaged by fire, plans to rebuild at once.

NEWARK.—The Essex Motors Mfg. Co. has been incorporated; motors, machinery, etc.; $100,000; by W. H. Simpson, East Orange, N. J.; M. E. Hadden, Newark; J. J. Coyle, New York City.

TRENTON.—R. H. Blakely & Co. plan to erect a one-story brick boiler house in connection with their plant here.

WESTFIELD.—Plans will be received by James E. Grape, chairman building commission, for the erection of a new school building estimated to cost about $100,000.

NEW YORK

AUBURN.—The Eagle Wagon Works advises it is adding a building 60 x 60 feet, brick, to provide for increasing business. Plans are being prepared for a two-story building to be erected in 1914.

BUFFALO.—The Autocrat Mfg. Co., Inc., has been incorporated; motorcycles and side cars; $50,000; by Frank Maytham, F. S. Mott and A. W. Plumley, Buffalo.

ELMIRA.—The Bigas Co., which was incorporated recently with a capital of $10,000, advises that it is manufacturing the Bigas flux for treating copper, brass, bronze, aluminum and other compositions. It is claimed the flux will eliminate imperfections in castings and will increase the strength of the castings by one-third. The company reports it has interested some of the largest automobile companies in its product. The executive office is at Elmira, N. Y., and the factory and laboratory at Bridgeport, Conn. Bert Stiles is president of the company.

MANHATTAN.—The Flexible Rim & Tire Co., Inc., has been incorporated to manufac-

ture tires and motor vehicles; $25,000; by C. E. Clapp, E. G. Ofeldt and A. H. Favour, 43 Cedar street, New York City.

MANHATTAN.—The Cotton Furnace Corporation of Manhattan has been incorporated; stoves and metal articles; $200,000; by Charles C. Brauch, Paul F. Lorzer and E. A. Brown, 149 Broadway, New York City.

MANHATTAN.—The Royal Typewriter Co., Inc., has been incorporated; typewriters, computers, recording and registering machines; $7,951,000; by Edwin B. Hess, Kenneth R. Howard, S. Metzger, 165 Broadway, New York City.

NEW YORK CITY.—The A. D. Mfg. & Sales Co. has been incorporated to manufacture machinery with a capital of $150,000.

NEW YORK CITY.—The Knickerbocker Ice Co. plans to erect a brick and reinforced concrete plant estimated to cost about $300,000. Mortensen & Co., architects.

NEW YORK CITY.—The Engineers' Club plans to erect a six-story addition estimated to cost about $100,000, plans for which are now being prepared by Beverly S. King.

OSWEGO.—The Kitts Steam Specialty Co., Inc., has been incorpoarted; iron, brass and steel goods; $10.000; by Willard A. Kitts, Richard V. Sohble, W. L. Kitts Jr., 39 Cortlandt street, New York City.

OHIO

AKRON.—The Tanner-Hower Mfg. Co. has been incorporated; $50,000; by O. Otis Hower, P. E. Tanner, Wm. T. Helfer, John C. Stafford and John Johnson.

ALLIANCE.—The Transue Drop Forging Co. recently purchased the old plant of the Davies-Bach Mfg. Co., which is being operated as a plant for steel stamping.

BARBERTON.—The Portage Rubber Co. plans to erect a 35 x 140-foot three-story addition to its plant here.

BELLEFONTAINE. — Big Four railroad shops here are to be abandoned. The announcement has been made by E. M. Costin, assistant general superintendent, after consultation with Vice President J. J. Bernet and General Manager H. A. Worcester.

CANTON.—The Eller Mfg. Co., manufacturer of metal roofing and ceiling, is erecting a plant covering two acres. All machinery will be operated by electric power. J. F. O'Dea, manager.

CHILLICOTHE. — The Drummond Wire Fence Co. advises it will continue to have its gates and fencing made by contract as heretofore and will not erect a plant. Officers of the company are: President and manager, J. W. Drummond; vice president, C. V. Jones; secretary-treasurer, L. J. Thornton; directors, J. Roy Drummond and Howard Drummond, in addition to officers.

CINCINNATI.—The Union Gas & Electric Co., Cincinnati, will be ready for estimates about Jan. 1 on its new $500,000 generating plant, to be built in that city.

CINCINNATI.—Chattles of the Schacht Motor Car Co., Winton place, Cincinnati, were disposed of at receiver's sale last week for about $40,000. Real estate will be sold Nov. 10.

CINCINNATI.—The American Oil Pump & Tank Co., Cincinnati, is now equipping its new plant, Kindle street and Central avenue, having recently purchased the plant of the American Tank & Pump Co., Dayton O., and moved its business to Cincinnati. Almost all the necessary equipment has been purchased with the probable exception of a few tools.

CINCINNATI.—The Cincinnati Car Co., Cincinnati, will manufacture all-steel cars exclusively for use in that city in the future. The company has recently added a new erecting shop where these cars will be assembled. Wooden cars will be abandoned as fast as they are used up by the Cincinnati Street Railway Co. and cars made entirely of steel will be substituted.

CINCINNATI.—A six-story office building will be erected at 24-26 East Fifth street, Cincinnati. The following contracts have been let by Samuel Hanniford & Sons, architects, of Cincinnati, who are in charge of the building: Sheet metal, W. J. Weitkamp, Cincinnati; metal windows, Voigtman & Co., Cincinnati; heating, the M. Crane Estate, Cincinnati, and elevators, the Warner Elevator Co., also of Cincinnati.

CLEVELAND.—The Cleveland Rotary Motor Co. has been incorporated; rotary motors; $1,000; by Paul Schwan Jr., C. W. Neubrand, K. L. Mach, A. T. Daniels and J. L. Bird.

CLEVELAND.—The DeForrest Electric Welding Co. has been incorporated; electric welding; $5,000; by H. J. Lamb, M. M. McLaughlin, C. P. Miser, H. B. Altman and Edward Cherney.

CLEVELAND.—The Automatic Addressing Machine Co. has been incorporated to manufacture addressing machines; $150,000; by W. K. Stanley, P. C. Stoller, J. W. Curtis, Albert Horswell and J. P. Harrington.

CLEVELAND.—The Folberth Auto Specialty Co. recently purchased a site here, upon which it plans to erect a one-story, 105 x 135-foot building to be used as a factory and garage.

COLUMBUS.—The Yaeger Machine Co. plans to erect a two-story foundry and machine shop building. Plans call for a brick, 60 x 350-foot structure, to be located on West Rich street.

CONNEAUT.—The New York, Chicago & St. Louis railroad is erecting a new boiler shop here, for which power and lighting equipment will be required.

COSHOCTON.—The board of commissioners of Coshocton county recently awarded the contract for the erection of the Randles bridge. George J. Bock & Son, contractors. Estimated cost $18,860.

DAYTON.—The Union Interurban Terminal Co., recently incorporated, plans to erect a five-story traction depot and office building estimated to cost about $100.000.

DAYTON.—The Egry Register Co. recently issued $50,000 additional stock for enlarging and improving its plant.

DEFIANCE. — The Auglaize Power Co. recently began construction work on a steam auxiliary plant in Maumee of 3,000 horsepower to be used as a reserve station on the power company's transmission line.

FREMONT.—The Niagara Falls Furnace Co. has bought the plant of the Fremont Furnace Co. It was owned formerly by the Jackson Shear Co. It will be dismantled and removed to Niagara Falls.

GALION.—The Galion Iron Works & Mfg. Co. has been incorporated; $10,000; by W. Pelton, B. T. Moyer, C. C. Gilmore, C. D. Wise, D. G. Strother, O. P. Beck and D. C. Boyd, Galion.

MARIETTA.—The Swan Under-Reamer Co. is erecting a factory for the manufacture of a patented machine shop tool. New equipment will be required. John C. Swan, president.

MIDDLETOWN.—The Shartle Bros. Machine Co. plans to begin construction work soon on a two-story brick and concrete addition estimated to cost about $10,000.

NEW COMERSTOWN.—The Sterling Specialty Co. has been incorporated; brass works; $40,000; by Pittsburgh business men.

YOUNGSTOWN.—The Concrete Steel Co. recently leased a site west of this city, and will soon award contracts for a 65 x 250-foot steel shop. W. H. Bouch, treasurer.

OKLAHOMA

TULSA.—The Iron & Steel Products Co., of Tulsa, has been incorporated; $100,000; by M. K. Weigel and F. C. Weigel, Tulsa, and Fletcher C. Fischer, Oklahoma City.

OREGON

ASHLAND.—The council is considering a proposal to build an auxiliary power plant. Cost $25,000.

CARLETON.—The Yamhill Electric Co., Newburg, has been awarded a franchise in this city.

GLADSTONE.—The Stephen Carver Electric Co. was granted a franchise to build an interurban car line through city. Plans for depot are under way.

KLAMATH FALLS.—Initial steps have been taken by the city council for a municipal power plant on Link river.

ORTLEY.—Cornelius Gardiner is making preparations to construct an electric tramway from this place to Rowena, at an estimated cost of about $25,000.

PORTLAND.—The Multnomah Iron Works has awarded contract for its new plant to Bingham & McClelland, Lumberman's building.

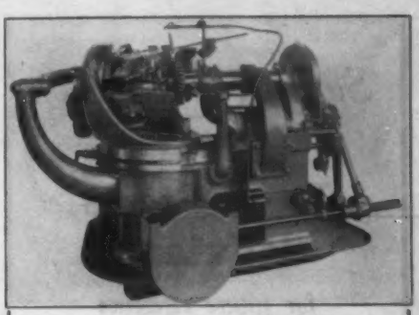
PORTLAND.—The Northwest Steel Co. recently completed plans and will begin construction work soon on its steel plant here. Plans include a 60 x 800-foot main shop; a 50 x 100-foot blacksmith shop; a 50 x 100-foot machine shop; a 50 x 100-foot template shop.

PENNSYLVANIA

BEAVER.—The Pennsylvania railroad plans to construct a 12-story addition to its passenger station here, plans for which are now being prepared by Daniel H. Burnham & Co., Chicago. Estimated cost about $1,000,000.

BEAVER FALLS.—The Penn Bridge Co. has taken the contract for lock gates for the Lake Washington canal, Seattle, Wash., for $309,691.

COATESVILLE.—The Y. M. C. A. directors recently decided to purchase a site,



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THE IRON TRADE REVIEW

CLEVELAND - OHIO

upon which to erect a new $100,000 Y. M. C. A. building.

ELLWOOD CITY.—The Mathews Gravity Carrier Co. plans to erect a plant estimated to cost about $25,000.

HARRISBURB.—The Montour Northern Railroad Co. has been incorporated to construct and operate a railroad in Washington and Beaver counties; $350,000; by M. H. Taylor, Erie, president; W. K. Fields, Columbus; J. P. Walsh Cleveland; H. P. McCue, Crafton; F. J. Lemoyne, J. A. Donaldson and C. M. Johnstown, Pittsburgh. The same parties are interested in the Mingo railroad consolidation recently effected. The Pittsburgh & Susquehanna railroad of Clearfield recently filed a notice of a $500,000 bond issue.

JOHNSONBURG. — The Cherrytree Iron Works, whose plant was recently damaged by fire, plans to rebuild.

JOHNSTOWN.—Operations are expected to be started shortly in the plant of the Davis Brake Beam Co., Johnstown. Machinery is nearly all placed.

LEBANON.—The American Iron & Steel Co. plans to erect a 343 x 700-foot plant estimated to cost about $500,000.

LINFIELD.—The plant of the Sanitary Co. of America, manufacturer of plumbing fixtures, was recently damaged by fire. Estimated loss about $75,000.

MECHANICSBURG.—The J. K. Hinkle Mfg. Co. has been incorporated:: $25,000; by J. K. Hinkle, J. G. Hinkle, M. L. Kutz, H. A. Shriver and E. L. Stengfield, Mechanicsburg.

PHILADELPHIA.—The General Flooring Co. plans to erect a two-story brick, 55 x 169-foot factory building. Webster & Ginson, engineers.

PHILADELPHIA.—The Henry Goldner Boiler & Tank Works has been incorporated; $15,000; by H. Goldner, E. Goldner, C. F. Wise, Philadelphia.

PHILADELPHIA.—Kelly & Faust will construct a four-story factory, plans for which are now being prepared by W. E. Dyer, architect.

PHILADELPHIA.—The Pembroke D. Harton Co. has been incorporated; baking machinery; $50,000; by Pembroke D. Harton, P. J. Crowe, J. A. Berg and D. J. Hanna, Philadelphia.

PHILADELPHIA.—Thomas Cogga recently awarded contracts for the erection of a five-story factory addition to his plant here. William Steele & Sons, contractor. Estimated cost, $25,000.

PITTSBURGH.—The plant of the Jones & Laughlin Steel Co. was recently damaged by fire. Loss $20,000.

PITTSBURGH.—The Marshall Bros. Co. has been incorporated; iron and steel; $5,000; by R. T. Rossell, L. R. Martin and J. A. Lager, Pittsburgh.

PITTSBURGH.—The board of education recently commissioned Edward Stotz, architect, to prepare plans for a $1,000,000 school to be erected in the Bellefield district.

PITTSBURGH.—The Schutte Electric Co. has been incorporated; electrical appliances; $30,000; by Herman Schutte, Wilkinsburg; G. L. Kopp, J. C. Platz, T. H. Evans and Louis N. Schuman, Pittsburgh.

PITTSBURGH.—W. L. Rodgers, president Pittsburgh Gage & Supply Co., has transferred to that interest adjoining property 72 x 174 feet, which probably will be used in making extensions.

PITTSBURGH. — Increase of bonded indebtedness of the Allegheny Steel Co., Pittsburgh, recently noted is for the purpose of increasing working capital and to provide for economical steam-saving appliances which have been bought.

PITTSBURGH.—The Oliver Iron & Steel Co. will install automatic stokers to operate four 400-horsepower Babcock & Wilcox boilers in power plant at South Tenth street works. D. S. Kohler, chief engineer, is taking estimates.

PITTSBURGH.—Capt. W. Harry Brown, aside from ordering three large coal barges, as previously noted, has bought the steamer G. W. Thomas, and has rechristened her "The Alicia." The steamer will be used in transporting coal to the Alicia coke oven plant.

PITTSBURGH.—James L. Mullen, structural contractor, Wabash building, recently has closed contracts for the erection of steel work for the following undertakings: James Hay building, Pittsburgh, two additional stories, 200 tons; Fletcher Trust Co. building, Indianapolis, 14 stories, 2,500 tons; Pittsburgh Railways Co., steel work for boiler support Brunots island power house, 500 tons; Central building for Carnegie Institute of Technology and a building for the Margaret Morrison school.

PITTSBURGH.—W. N. Kratzer & Co., contractors and erectors, report the following contracts taken recently: American Steel Foundries, furnishing and erecting steel work for crane runway at Alliance, O., plant; United States government, Ohio river improvement, power houses, Lock 7 and Lock 8; Philadelphia Co., Pittsburgh, furnishing and erecting steel work for alterations and engine house at Brunots island power station; H. L. Kreusler, Pittsburgh, furnishing structural steel work for Tuberculosis hospital, Pittsburgh; West Leechburg Steel Co., Leechburg, Pa., furnishing and erecting steel work for rolling mill and gas producer buildings; Standard Refractories Co., Claysburg, Pa., furnishing and erecting steel for two buildings at brick plant; the Kelly & Jones Co., Greensburg, Pa., furnishing and erecting steel for foundry building addition; C. F. Fox, Vandergrift, Pa., furnishing steel work for store and apartment building; Union Carbide Co., furnishing structural steel for crushing and packing departments for plant at Sault Ste. Marie; Dempcy-Degener Co., Pittsburgh, furnishing steel work for coal bin and structural steel for gallery proper for skip hoist; Roberts & Schaefer Co., Chicago, furnishing and erecting structural steel and galvanized corrugated roofing and siding for steel tipple for the Brothers Valley Coal Co. Macdonaldton, Pa.; Hustead-Seamans Coal & Coke Co., Uniontown, Pa., furnishing steel for larry tretle; Stonega Coal & Coke Co., Big Stone Gap, W. Va., furnishing steel for Imboden coal bin.

UNIONTOWN.—The Strange Creek Coal & Coke Co. will develop 4,000 acres of coal near Strange creek, W. Va. John C. Hibbs, of this city, is president.

WILLIAMSPORT.—A new galvanizing plant is being installed at the works of the Williamsport Iron & Nail Co.

WILLIAMSPORT.—David Powell, of Powell & Co., is receiving bids for the erection of a three-story brick factory building estimated to cost about $11,000.

RHODE ISLAND

PROVIDENCE.—The American Enamel Works plans to rebuild its plant, contracts for the construction of which were recently awarded. Plans call for a 150 x 150-foot one-story brick building estimated to cost about $18,000.

TENNESSEE

KNOXVILLE.—The Knoxville Iron Co. plans to rebuild its machine shops recently damaged by fire. Plans call for a 50 x 125-foot structure.

TEXAS

DALLAS.—Fire in the plant of the Wesson Iron Foundry Co., Dallas, practically destroyed patterns and tool eqquipment, as well as ruining the building.

FORT WORTH.—The Enterprise Iron & Foundry Co. has been incorporated; $15,000; by W. H. Horrell, J. A. Horrell and J. A. Horrell Jr., Fort Worth.

SAN ANTONIO.—The Missouri, Kansas & Texas railroad plans to erect terminal yards and passenger station to cost about $1,250,000.

VIRGINIA

SALISBURY.—The Machinery Supply Co. has been incorporated; $7,000; by R. H. Morrison, M. A. Hodgin, et al.

WASHINGTON

BELLINGHAM.—The Olympic-Portland Cement Co., has awarded contract for new building to C. F. Martin, New York building, Seattle, at $35,000.

BELLINGHAM.—The board of county commissioners has awarded a franchise to Sumas Electric Co. to build transmission line from Sumas to Everson.

BREMERTON.—The war department has awarded the following contracts for building ship-fitter's shop, mold loft and steel storage shed at navy yard here: American Bridge Co., New York, structural steel work, $149,640; W. N. Concannon Co., San Francisco, erecting buildings, $88,134.

CHENEY.—Plans and specifications for the state normal school at this point to cost $300,000 are being worked out by Architect J. A. Zittel.

OLYMPIA.—A resolution calling for the installation of 8-inch sewers in a large improvement district has been adopted by the city council.

REPUBLIC.—Local mining companies are preparing plans for central power plant for use of all. Oil burning engine will be installed.